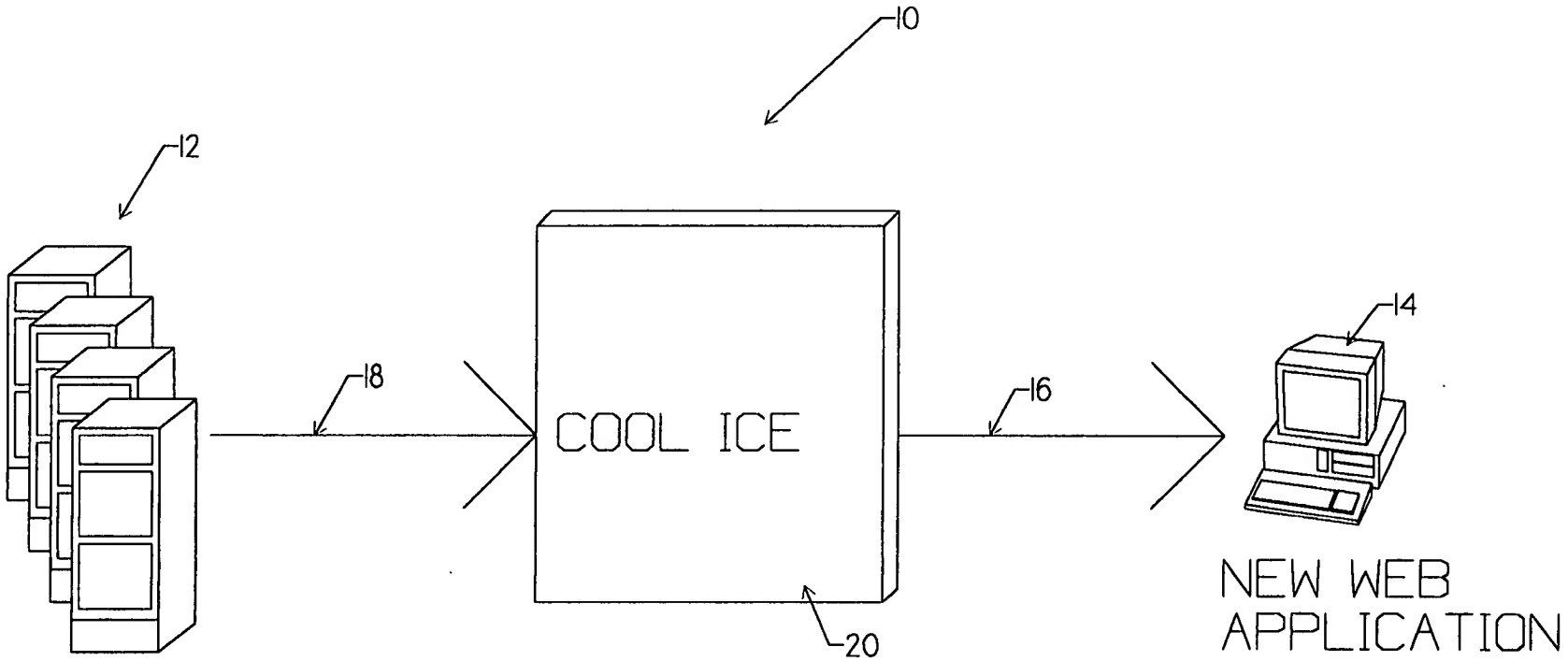
10
12
18
COOL ICE
16
14
20
NEW WEB APPLICATION
EXISTING DATABASES AND APPLICATIONS

FIG. 1

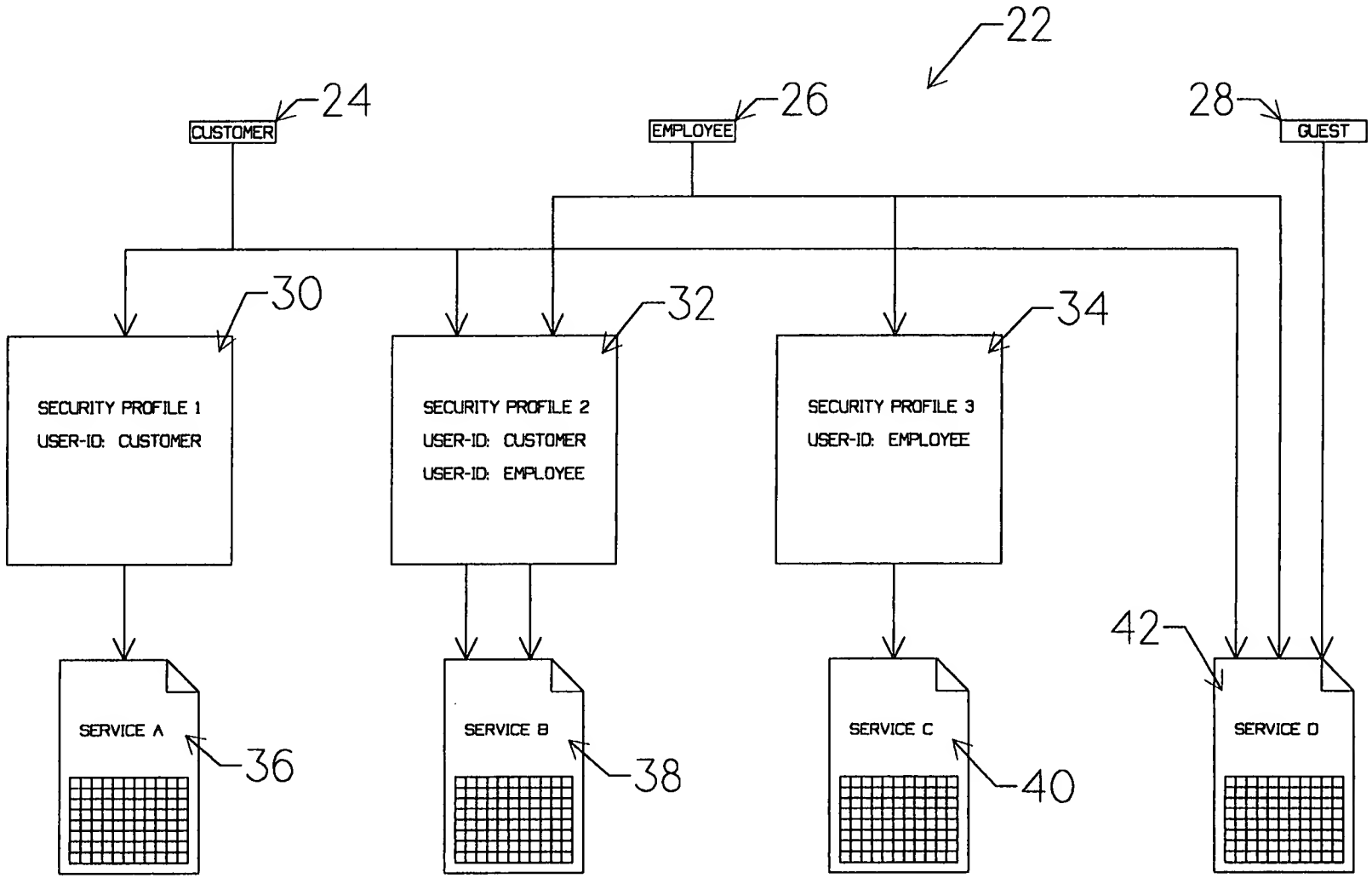
22
CUSTOMER
24
EMPLOYEE
26
GUEST
28
30
32
34
SECURITY PROFILE 1
USER-ID: CUSTOMER
SECURITY PROFILE 2
USER-ID: CUSTOMER
USER-ID: EMPLOYEE
SECURITY PROFILE 3
USER-ID: EMPLOYEE
42
SERVICE A
36
SERVICE B
38
SERVICE C
40
SERVICE D

FIG. 2

PAGE 2 OF 2

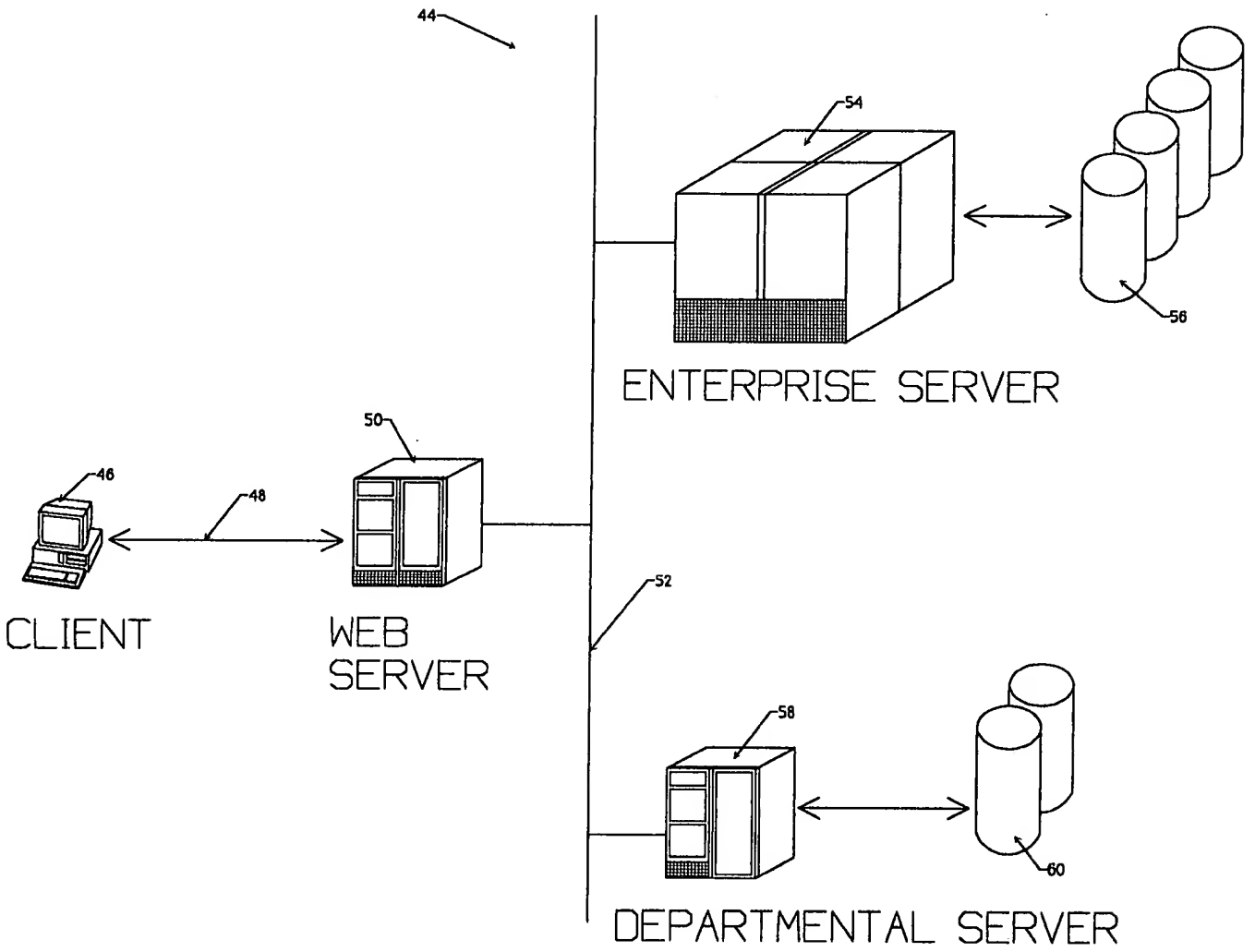

FIG. 3

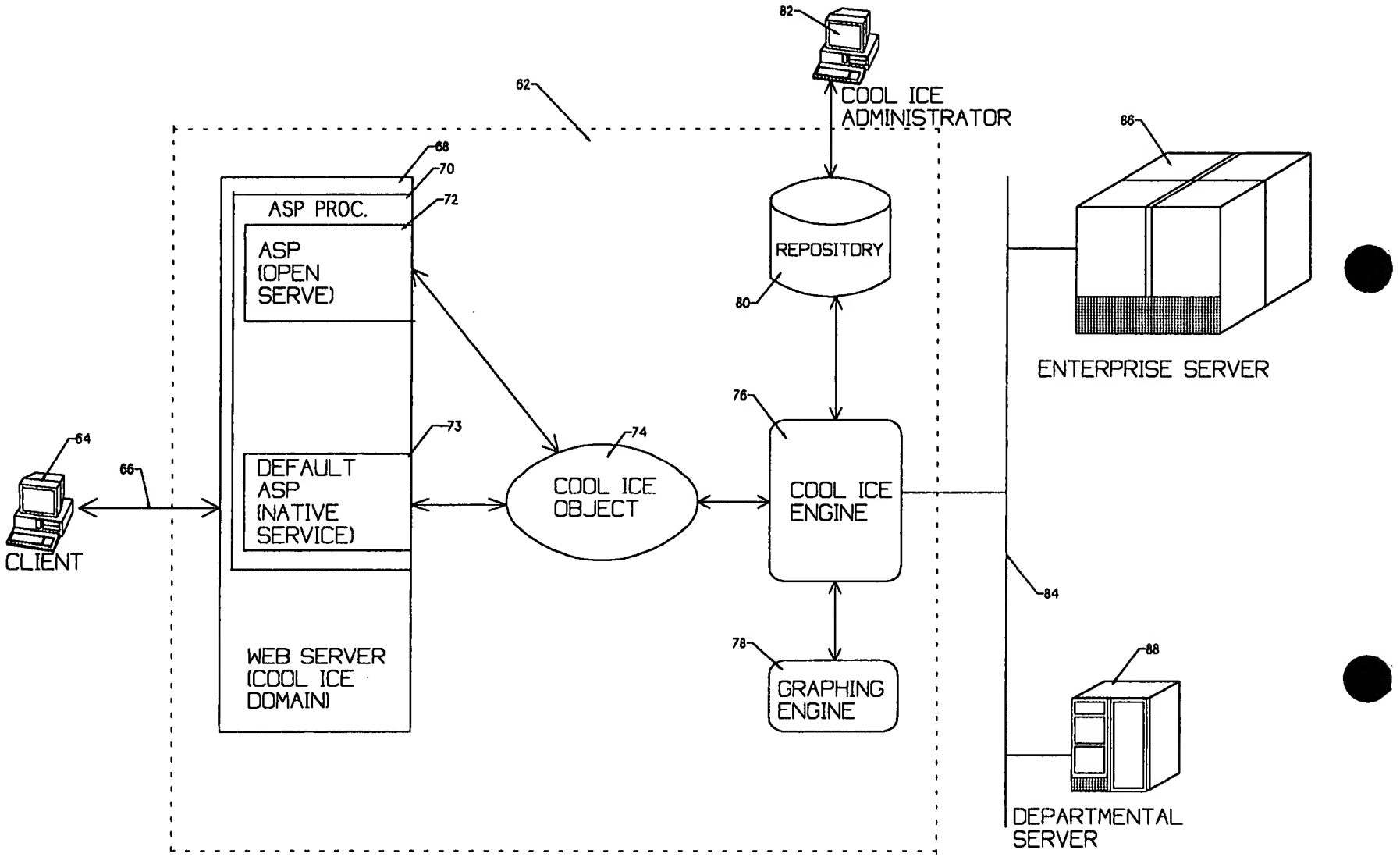
82
COOL ICE
ADMINISTRATOR
62
68
70
72
ASP PROC.
ASP
(OPEN
SERVE)
REPOSITORY
80
86
ENTERPRISE SERVER
64
66
CLIENT
73
DEFAULT
ASP
(NATIVE
SERVICE)
74
COOL ICE
OBJECT
76
COOL ICE
ENGINE
84
78
GRAPHING
ENGINE
88
DEPARTMENTAL
SERVER
WEB SERVER
(COOL ICE
DOMAIN)

FIG. 4

PATENT APPLICATION

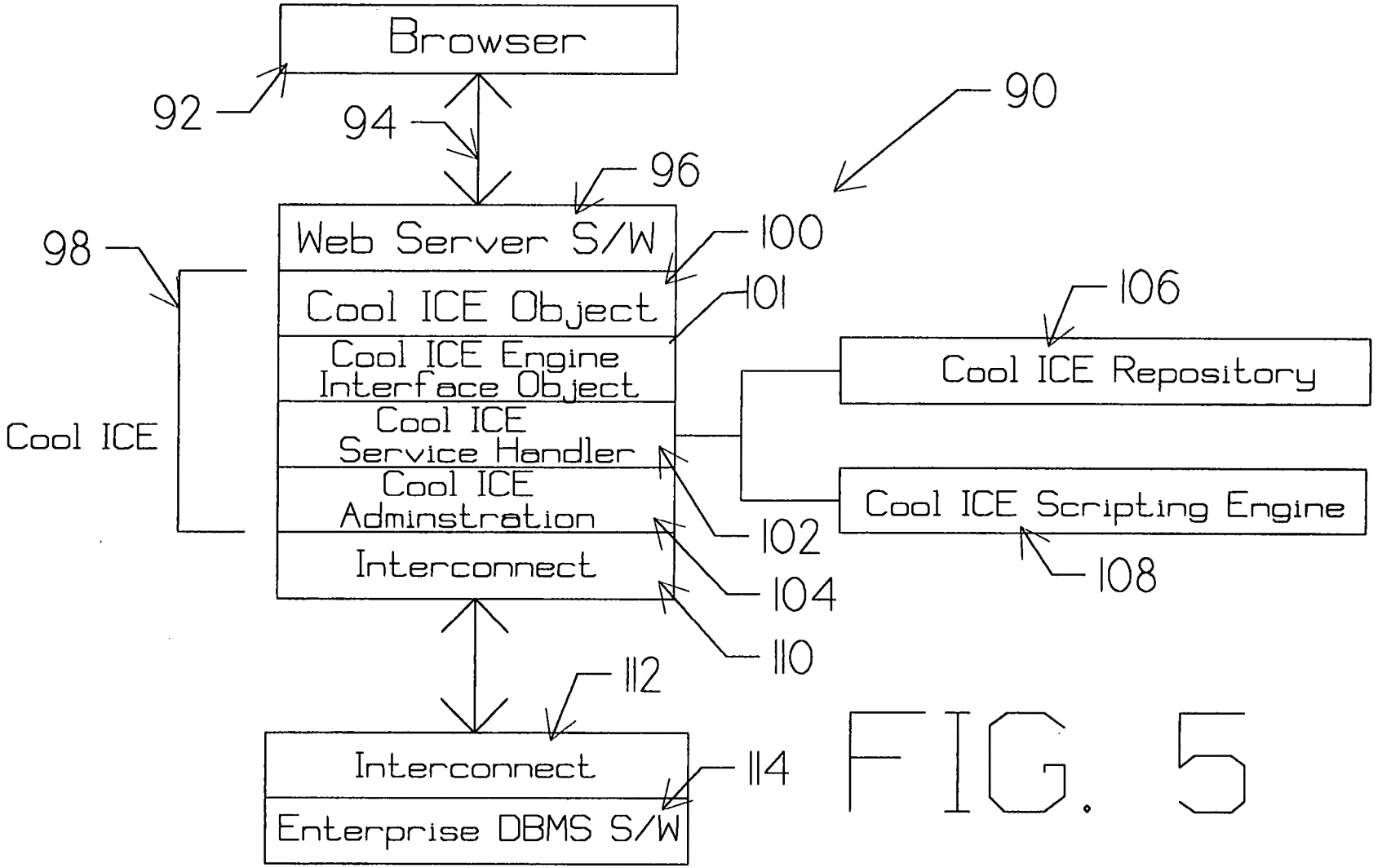

FIG. 5

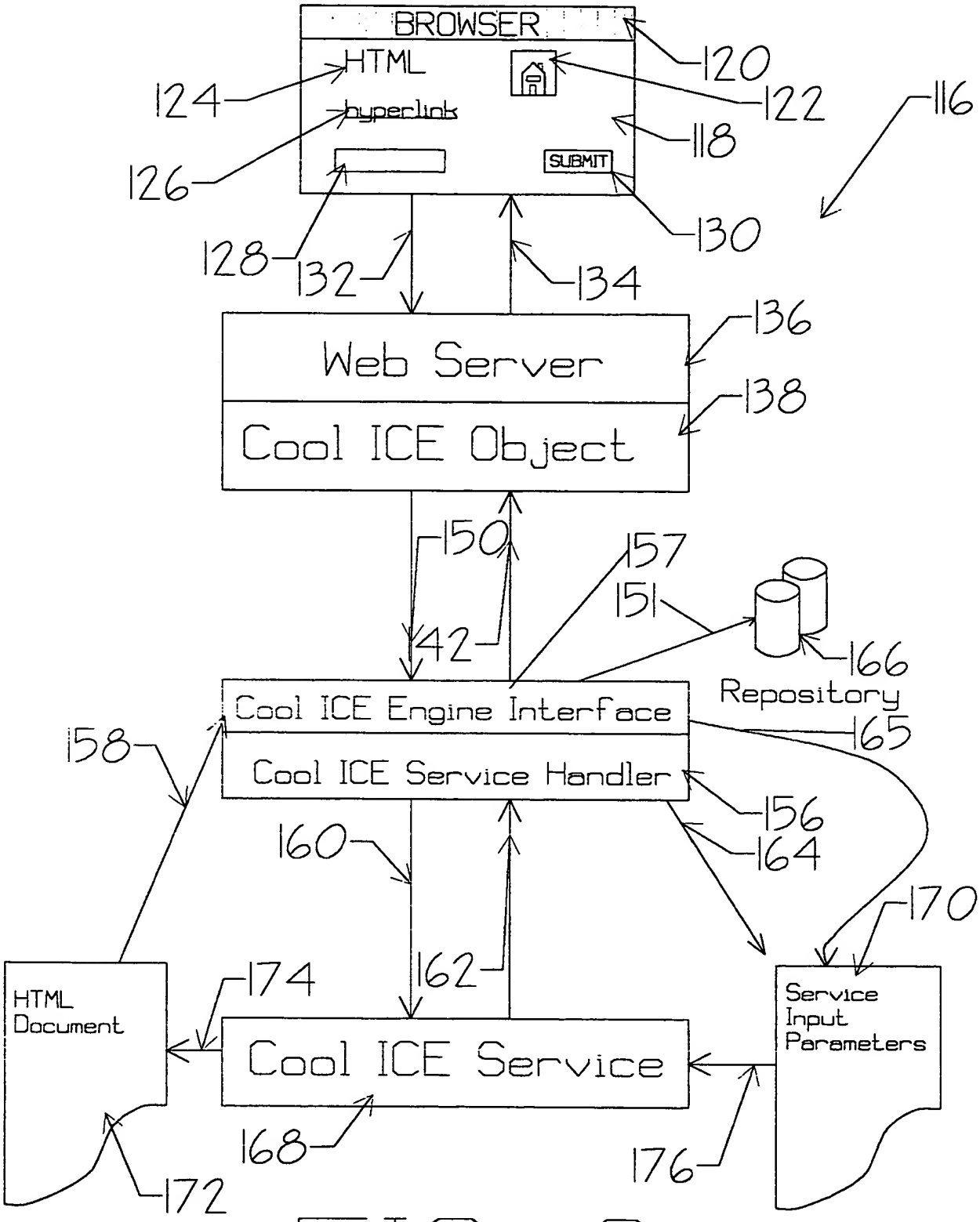
BROWSER
HTML
hyperlink
SUBMIT
120
122
124
126
116
118
128
130
132
134
Web Server
136
Cool ICE Object
138
150
157
151
42
166
Repository
Cool ICE Engine Interface
165
158
Cool ICE Service Handler
156
160
164
170
162
174
HTML
Document
Service
Input
Parameters
Cool ICE Service
168
176
172

FIG. 6

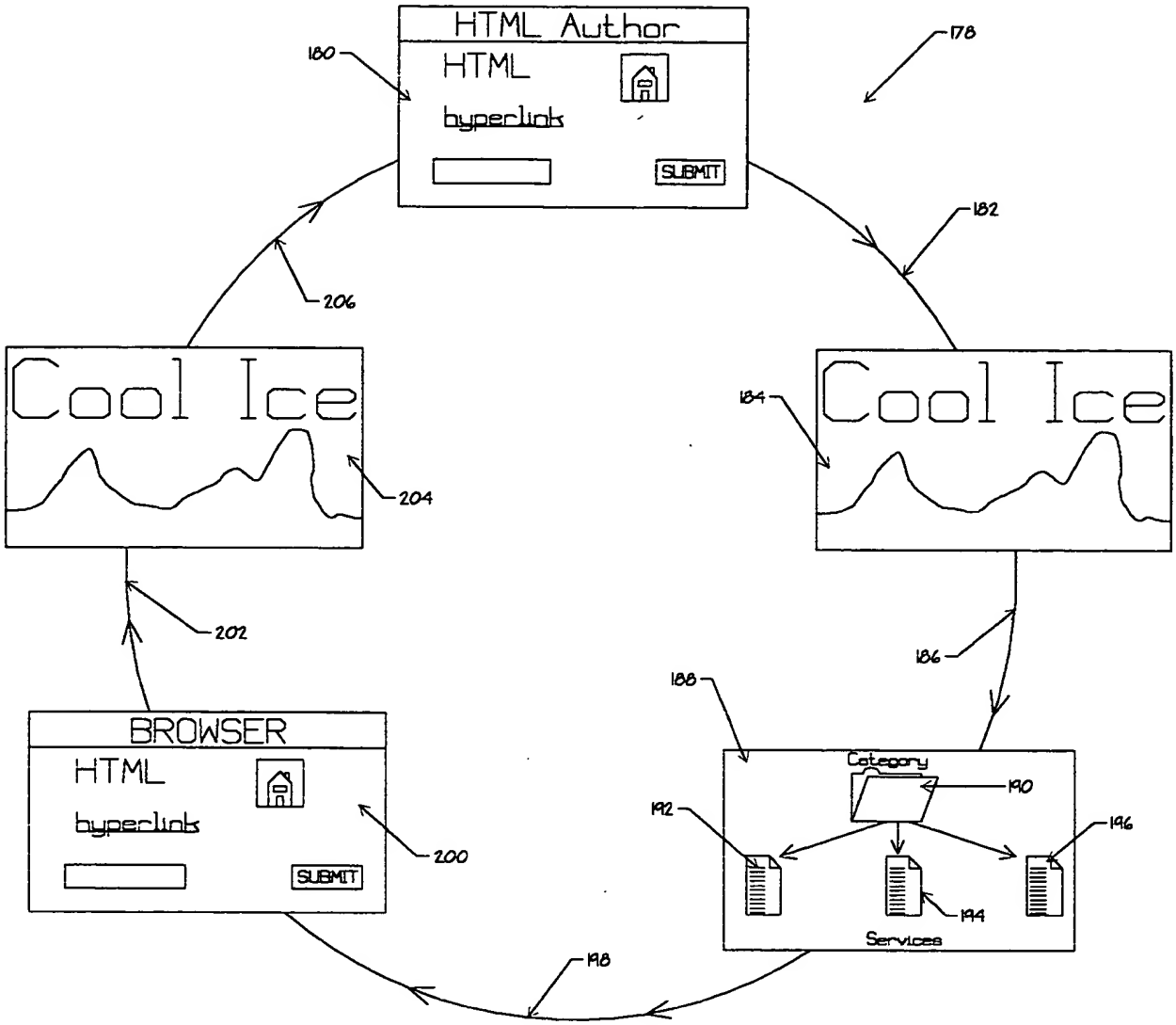
HTML Author
HTML
hyperlink
SUBMIT
178
180
182
206
Cool Ice
204
Cool Ice
184
202
186
188
BROWSER
HTML
hyperlink
SUBMIT
200
Category
190
192
194
196
Services
198

FIG. 7

TOSCA-36262

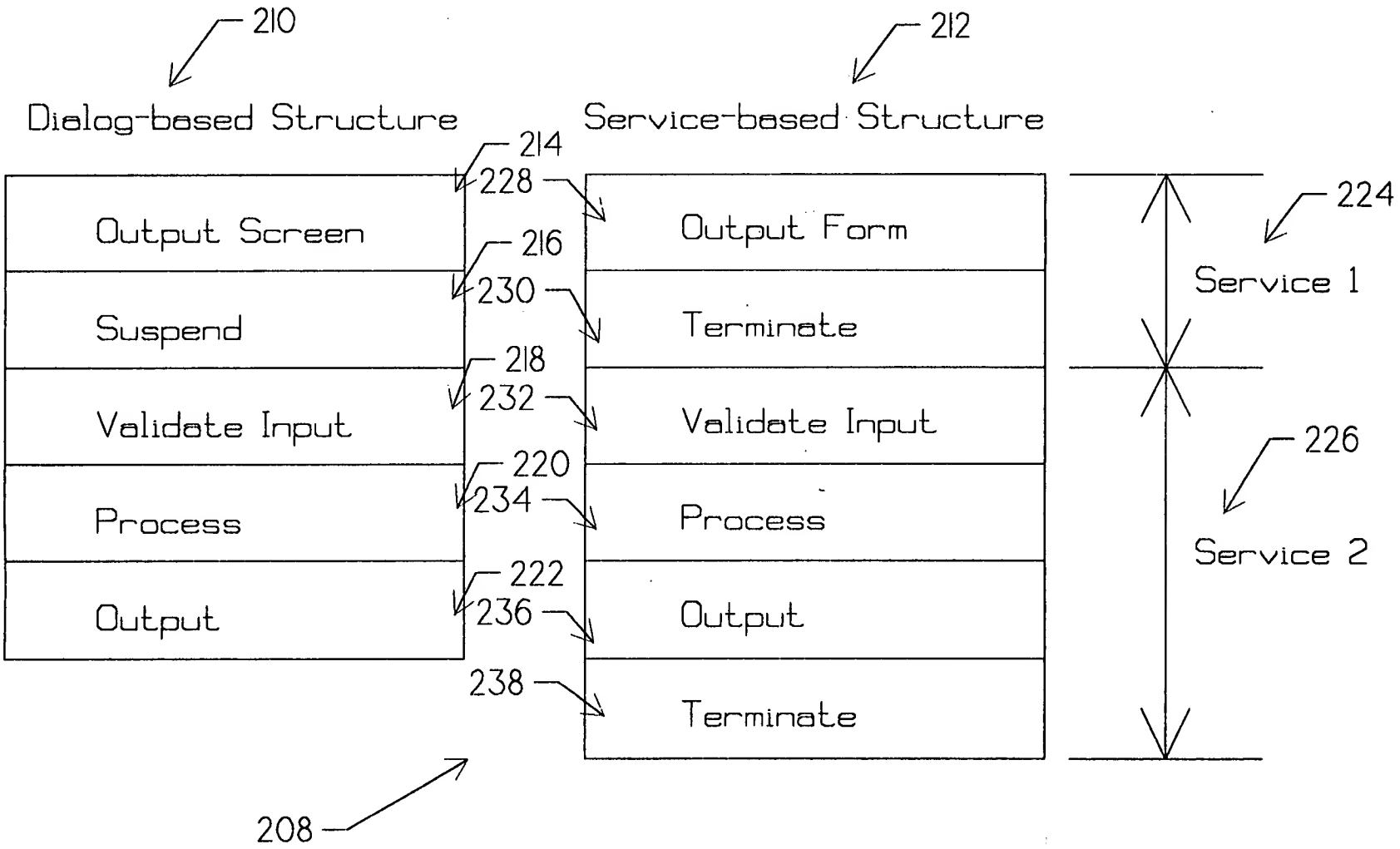

FIG. 8

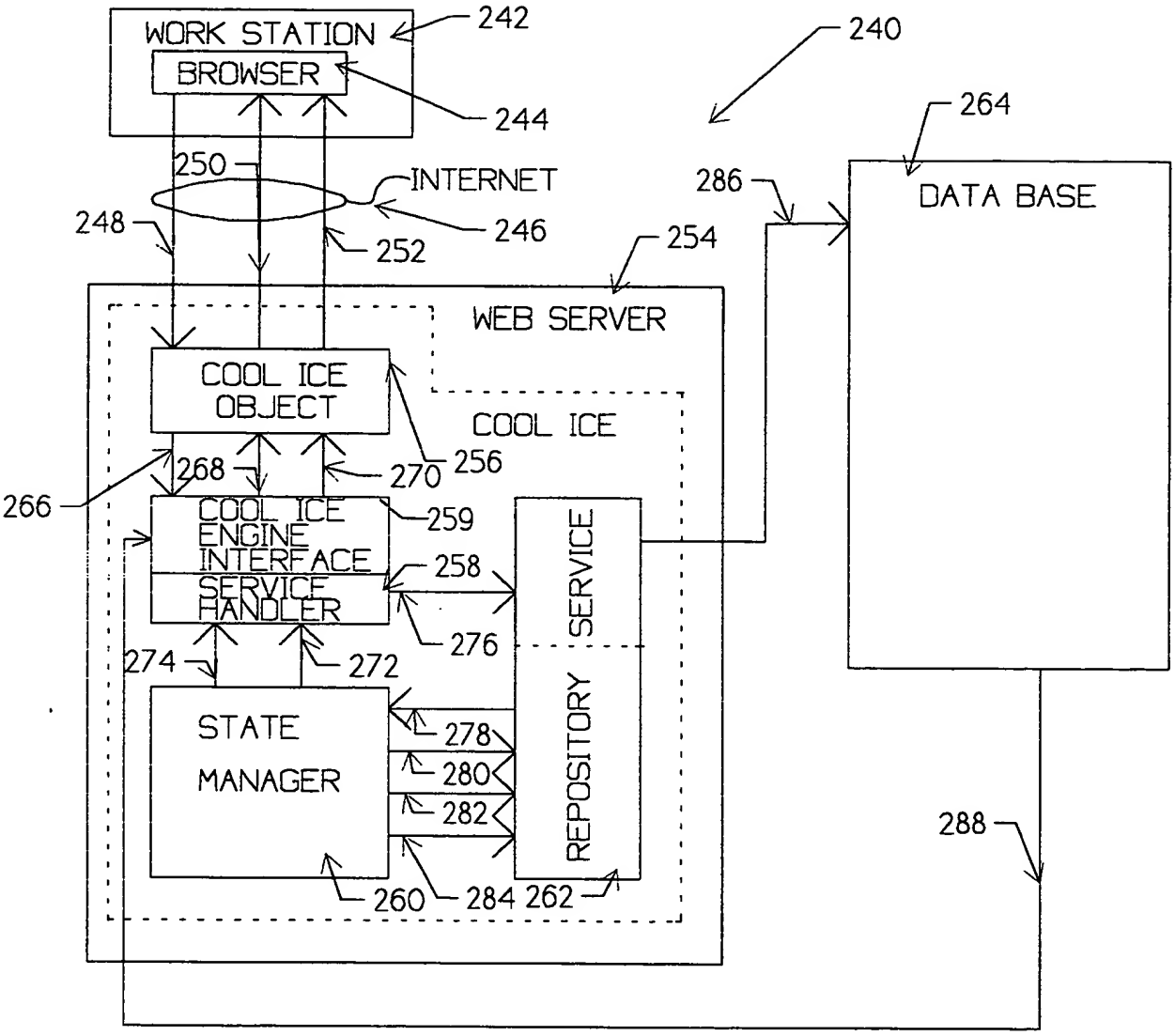
WORK STATION
BROWSER
242
244
240
264
250
INTERNET
246
248
252
254
286
DATA BASE
WEB SERVER
COOL ICE OBJECT
COOL ICE
256
268
270
266
COOL ICE ENGINE INTERFACE
259
SERVICE HANDLER
258
276
SERVICE
REPOSITORY
274
272
STATE MANAGER
278
280
282
288
260
284
262

FIG. 9

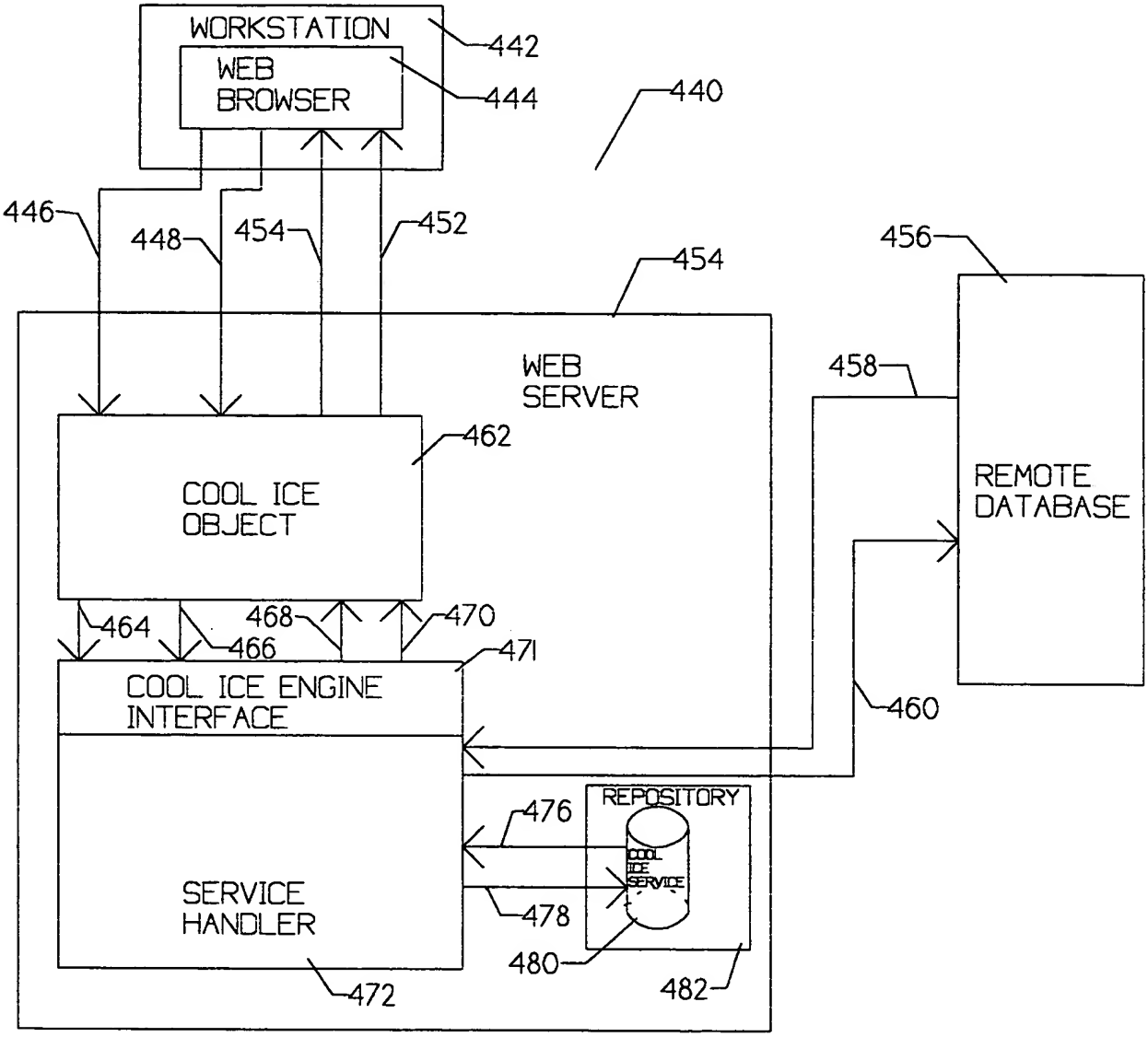
WORKSTATION
WEB BROWSER
442
444
440
446
448
454
452
456
454
WEB SERVER
458
462
COOL ICE OBJECT
REMOTE DATABASE
464
466
468
470
471
COOL ICE ENGINE INTERFACE
460
REPOSITORY
476
COOL ICE SERVICE
SERVICE HANDLER
478
480
482
472

FIG. 10

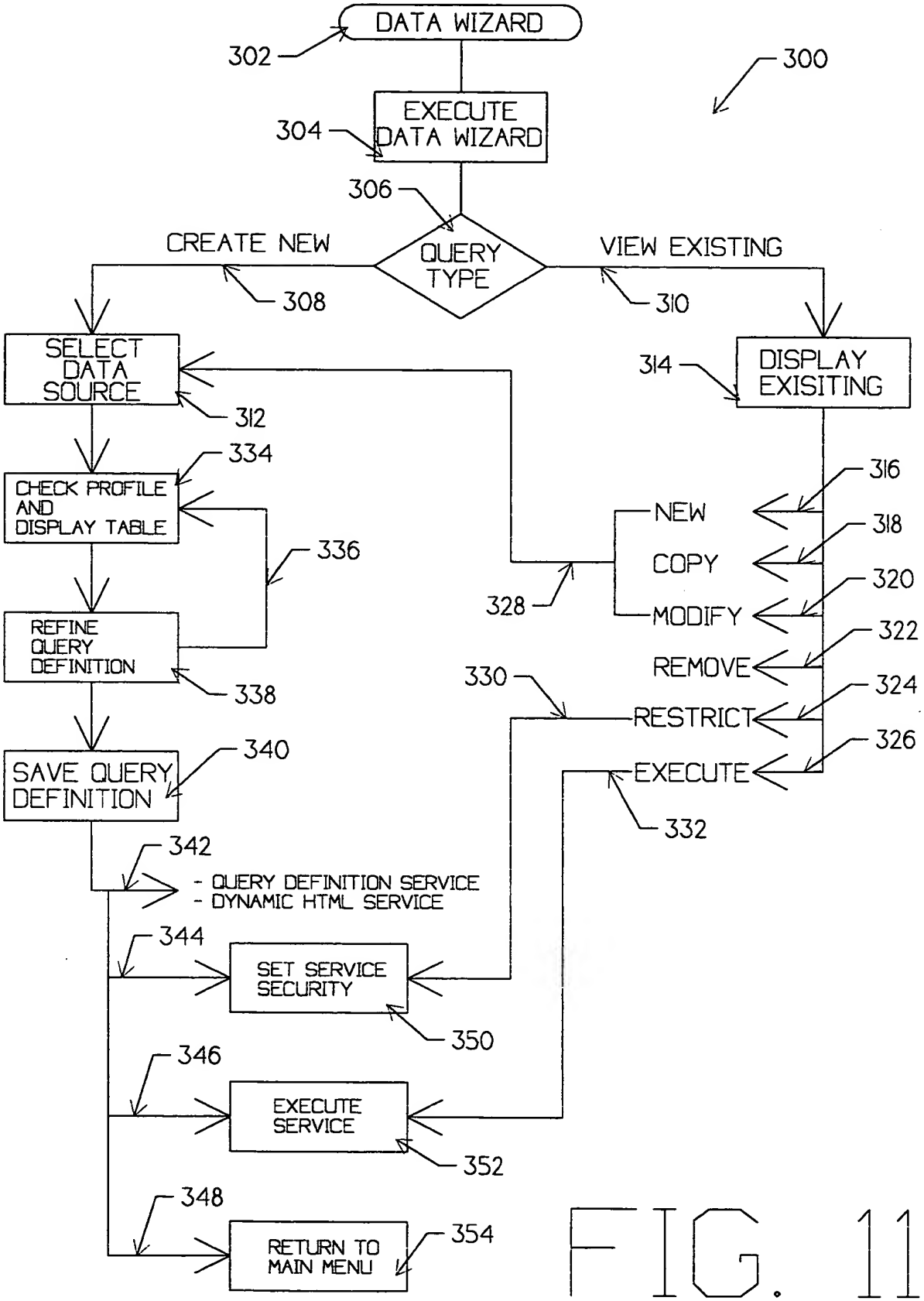
DATA WIZARD
302
300
EXECUTE DATA WIZARD
304
306
QUERY TYPE
CREATE NEW
VIEW EXISTING
308
310
SELECT DATA SOURCE
312
DISPLAY EXISITING
314
316
NEW
318
COPY
320
MODIFY
322
REMOVE
324
RESTRICT
326
EXECUTE
328
330
332
334
CHECK PROFILE AND DISPLAY TABLE
336
REFINE QUERY DEFINITION
338
SAVE QUERY DEFINITION
340
342
- QUERY DEFINITION SERVICE
- DYNAMIC HTML SERVICE
344
SET SERVICE SECURITY
350
346
EXECUTE SERVICE
352
348
RETURN TO MAIN MENU
354

FIG. 11

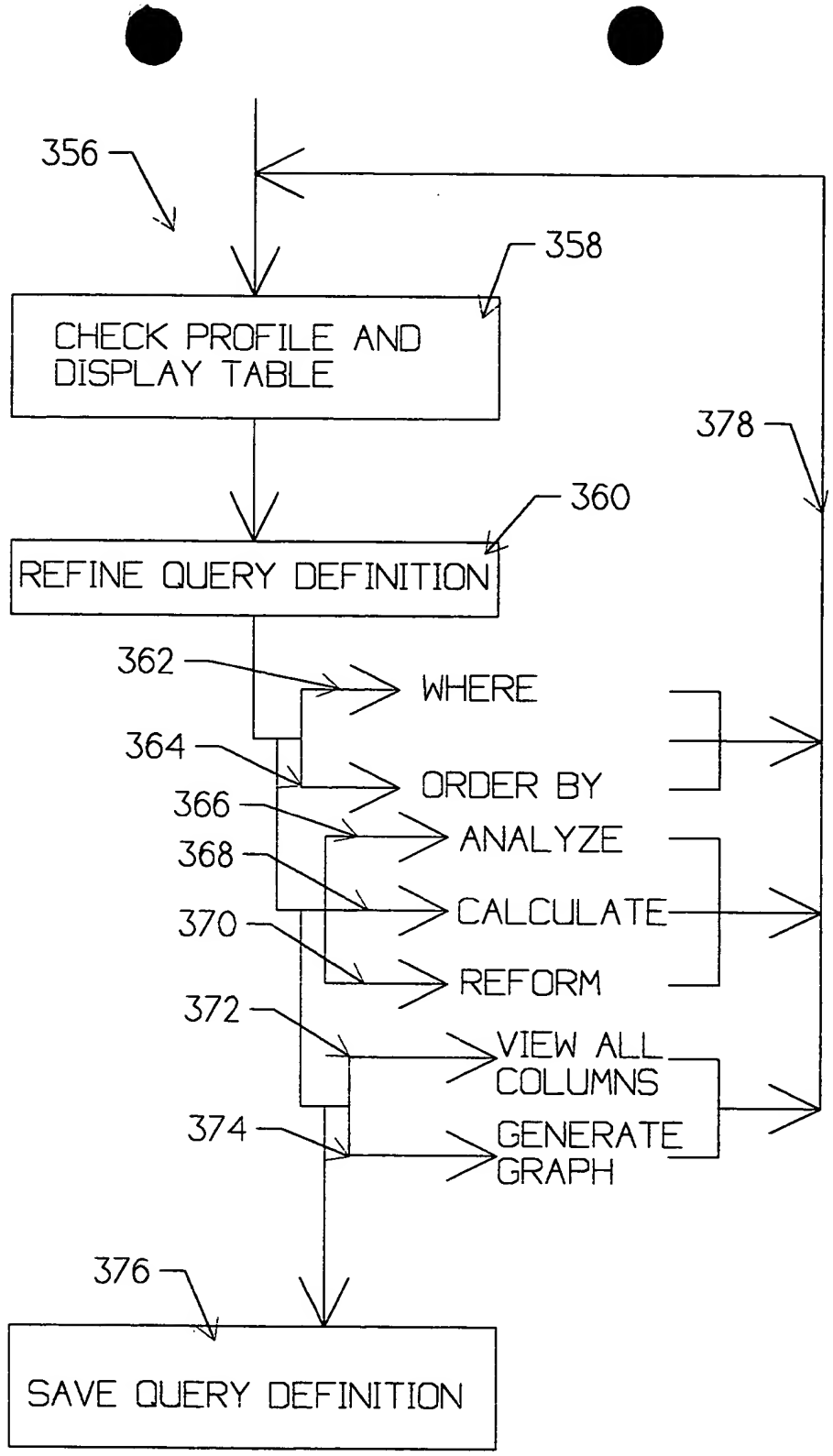
356
358
CHECK PROFILE AND DISPLAY TABLE
378
360
REFINE QUERY DEFINITION
362
WHERE
364
ORDER BY
366
ANALYZE
368
CALCULATE
370
REFORM
372
VIEW ALL COLUMNS
374
GENERATE GRAPH
376
SAVE QUERY DEFINITION

FIG. 12

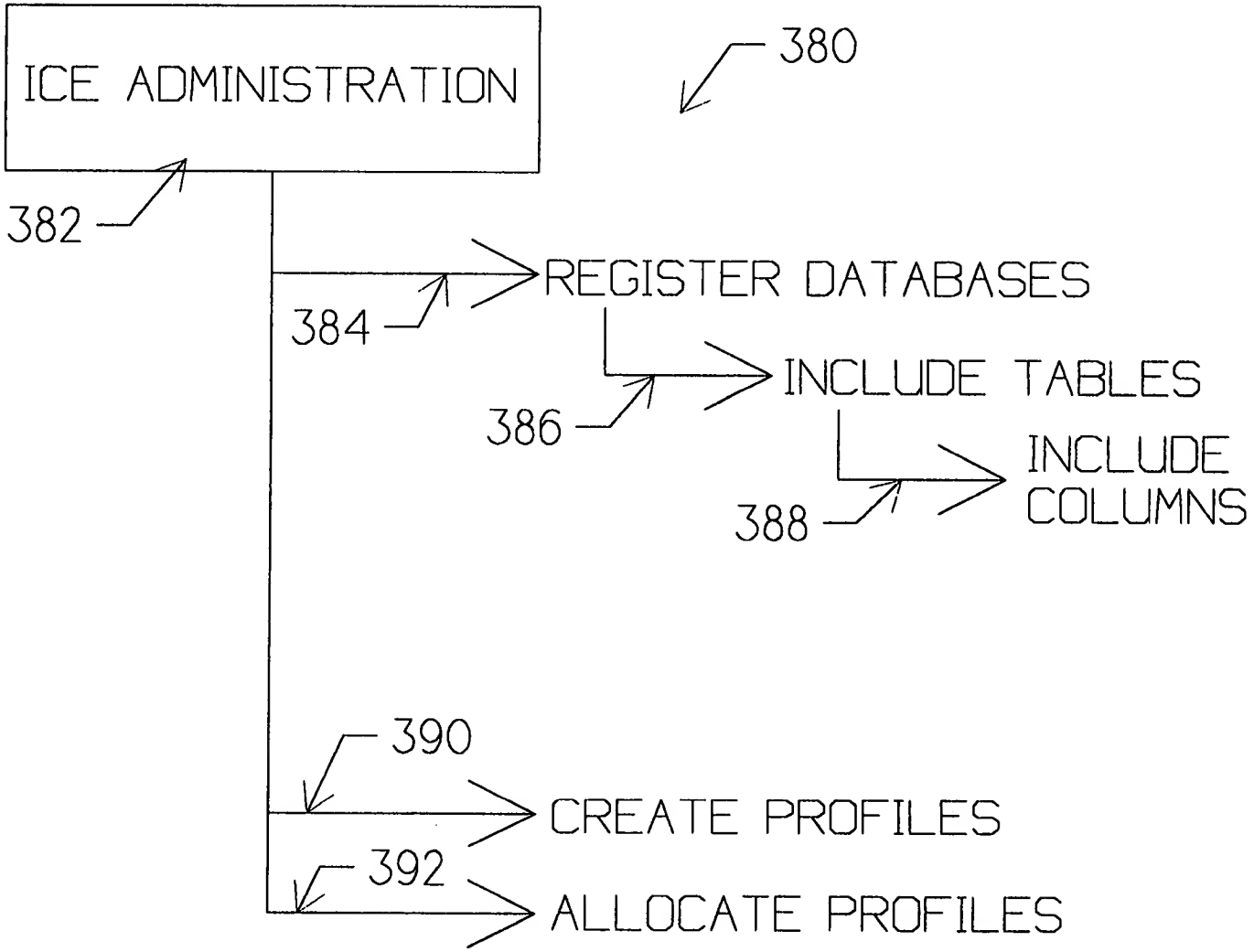
ICE ADMINISTRATION
380
382
REGISTER DATABASES
384
INCLUDE TABLES
386
INCLUDE COLUMNS
388
390
CREATE PROFILES
392
ALLOCATE PROFILES

FIG. 13

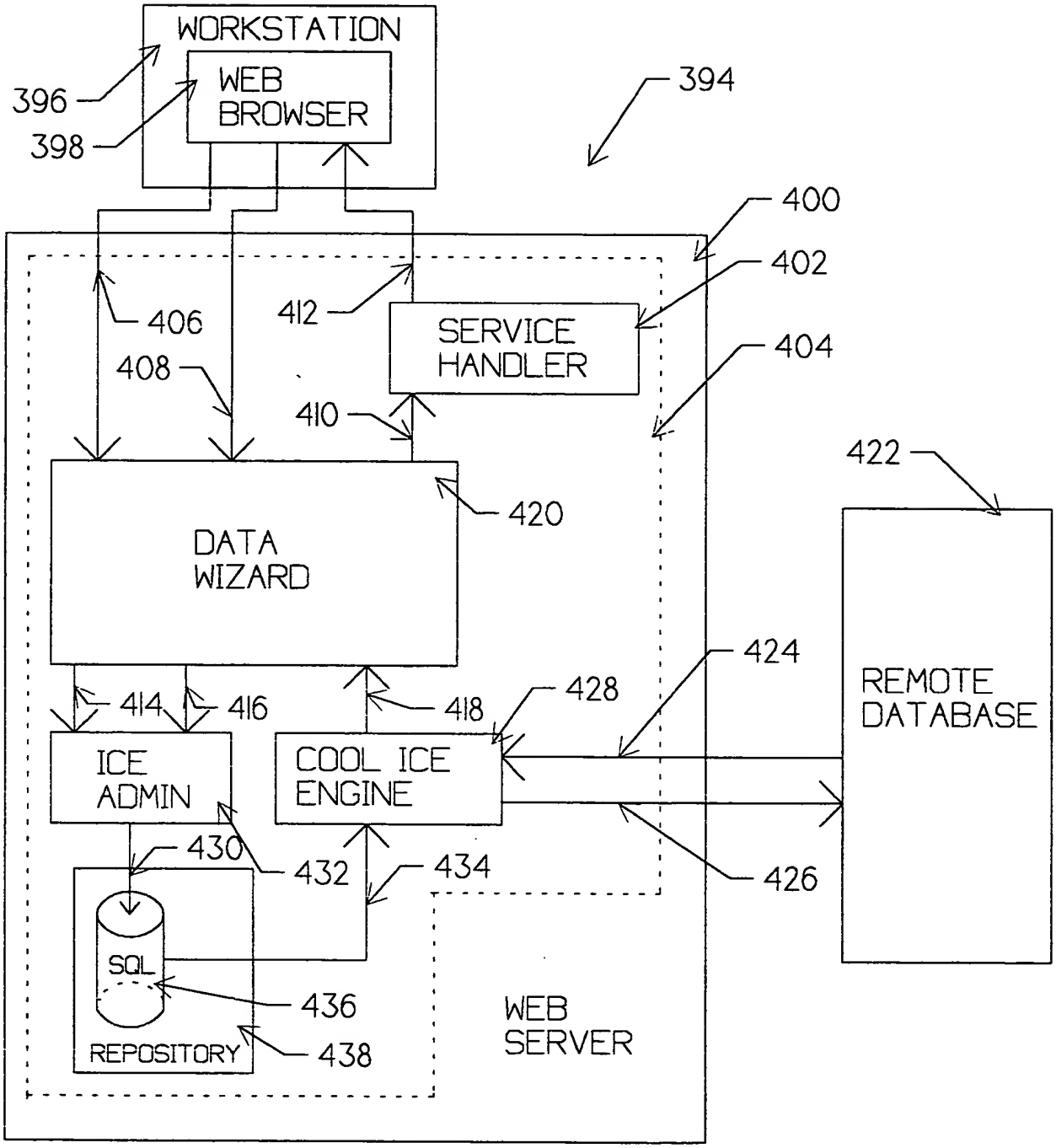
WORKSTATION
WEB BROWSER
396
398
394
400
402
406
412
SERVICE HANDLER
404
408
410
422
DATA WIZARD
420
424
REMOTE DATABASE
414
416
418
428
ICE ADMIN
COOL ICE ENGINE
430
432
434
426
SQL
436
WEB SERVER
REPOSITORY
438

FIG. 14

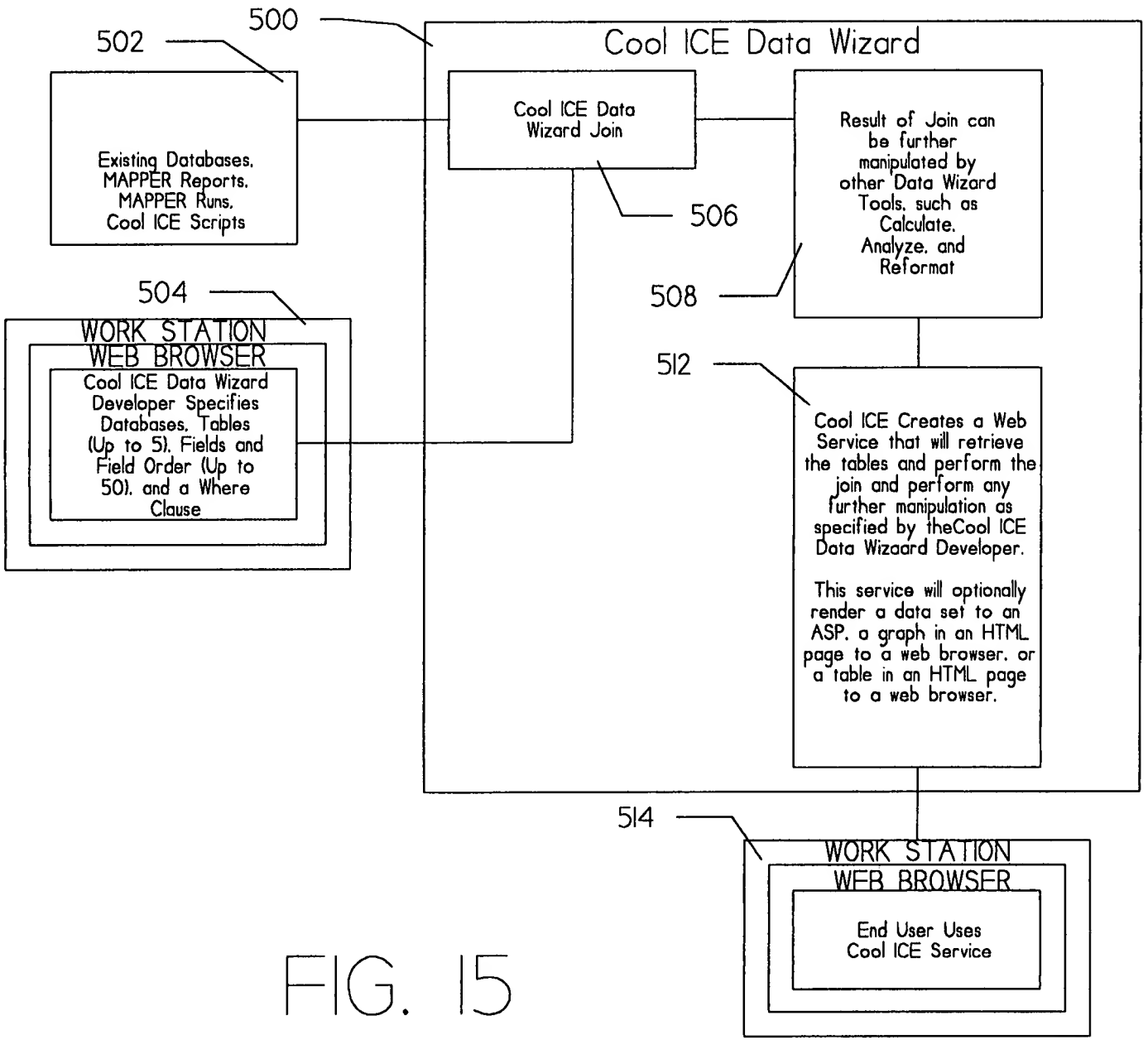
500
Cool ICE Data Wizard
502
Existing Databases, MAPPER Reports, MAPPER Runs, Cool ICE Scripts
Cool ICE Data Wizard Join
506
Result of Join can be further manipulated by other Data Wizard Tools, such as Calculate, Analyze, and Reformat
508
504
WORK STATION WEB BROWSER
Cool ICE Data Wizard Developer Specifies Databases, Tables (Up to 5), Fields and Field Order (Up to 50), and a Where Clause
512
Cool ICE Creates a Web Service that will retrieve the tables and perform the join and perform any further manipulation as specified by theCool ICE Data Wizaard Developer.
This service will optionally render a data set to an ASP, a graph in an HTML page to a web browser, or a table in an HTML page to a web browser.
514
WORK STATION WEB BROWSER
End User Uses Cool ICE Service

FIG. 15

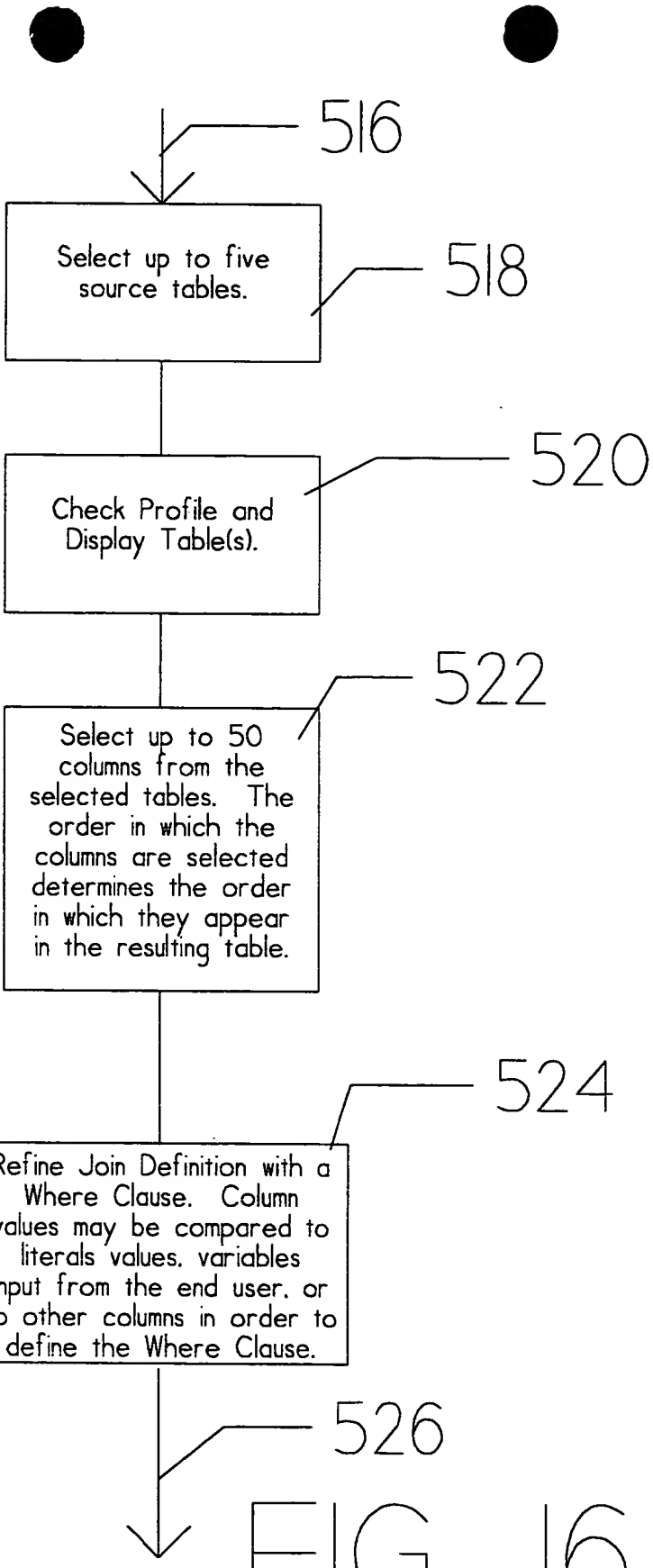
516
Select up to five source tables.
518
Check Profile and Display Table(s).
520
Select up to 50 columns from the selected tables. The order in which the columns are selected determines the order in which they appear in the resulting table.
522
Refine Join Definition with a Where Clause. Column values may be compared to literals values, variables input from the end user, or to other columns in order to define the Where Clause.
524
526

FIG. 16

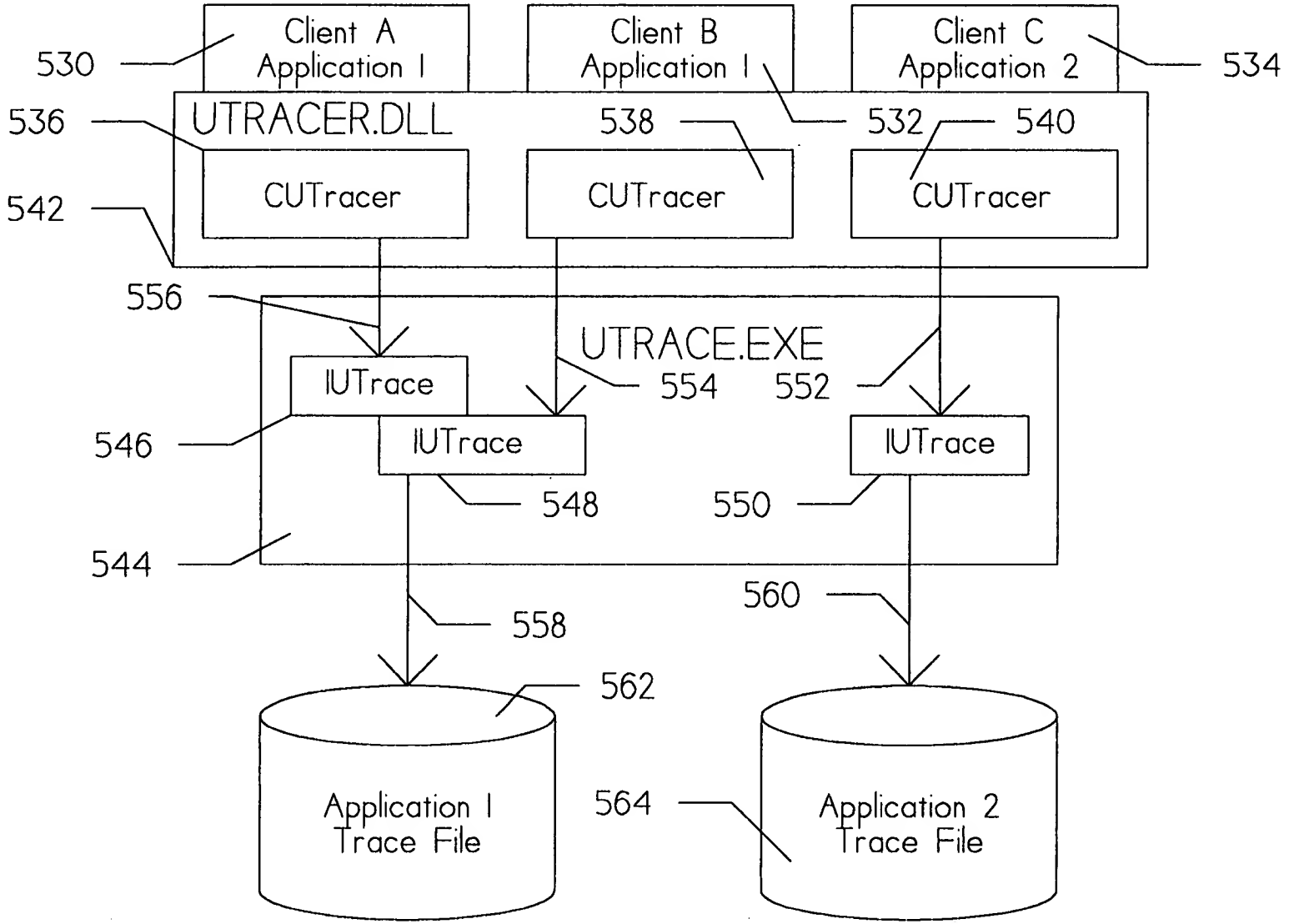
Client A
Application 1
Client B
Application 1
Client C
Application 2
530
534
UTRACER.DLL
536
538
532
540
CUTracer
CUTracer
CUTracer
542
556
UTRACE.EXE
IUTrace
IUTrace
IUTrace
554
552
546
548
550
544
560
558
562
Application 1
Trace File
564
Application 2
Trace File

FIG. 17

Traced Copy

HKLM\SOFTWARE\UNISYS\UTRACE

APPNAME -- Subkey matching the name of the application

565

- ENABLETRACE -- DWORD value indication a Boolean (1=trace., 0=no trace).
- MAXENTRIES -- DWORD value indicating the maximum number of entries in the trace file. If missing, then no upper limit is imposed.
- FORMATFLAGS -- DWORD value indicating message formatting flags.
- POLICYFLAGS -- DWORD value indicating trace policy flags set for the application.
- TRACELEVEL -- DWORD value indicating a trace level. 0 - no trace.
- TRACEPATH -- String value indicating the directory path for the trace files.
- REGTRACE -- A string value containing the HKLM\Software sub key to trace for this application. Blank or missing for no registry trace.
- COMPONENT -- A subkey for a specific component of the application.
  - POLICYFLAGS -- Value indicating component level trace policy flags
  - TRACELEVEL -- DWORD Value indicating a trace level. 0 = no trace.
  - VERSIONTRACE-- String value specifying executable component name for version information tracing.

FIG. 18

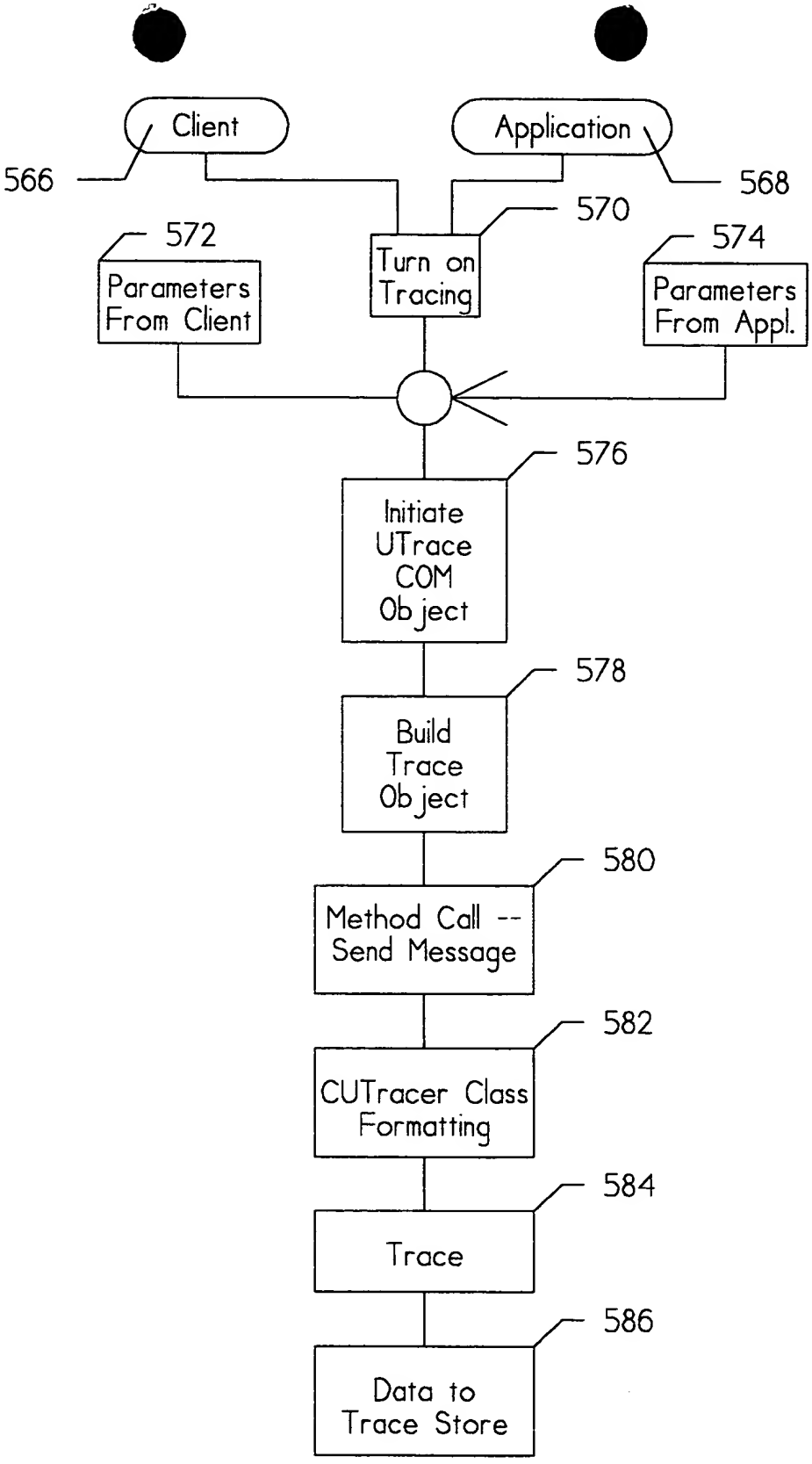
Client
Application
566
568
570
572
574
Turn on Tracing
Parameters From Client
Parameters From Appl.
576
Initiate UTrace COM Object
578
Build Trace Object
580
Method Call -- Send Message
582
CUTracer Class Formatting
584
Trace
586
Data to Trace Store

FIG. 19

```
#define CI_TRACE_VERSION        0xl
#define CI_TRACE_ERROR          0x2
#define CI_TRACE_INTERFACE      0x4
#define CI_TRACE_FLOW           0x8
#define CI_TRACE_DETAIL         0xl0
```

FIG. 20A

```
if (m_trace. Active(C)_TRACE_DETAIL))
m_trace<<"MY Detailed Trace information"<<Localvariable<<traceit
```

FIG. 20B

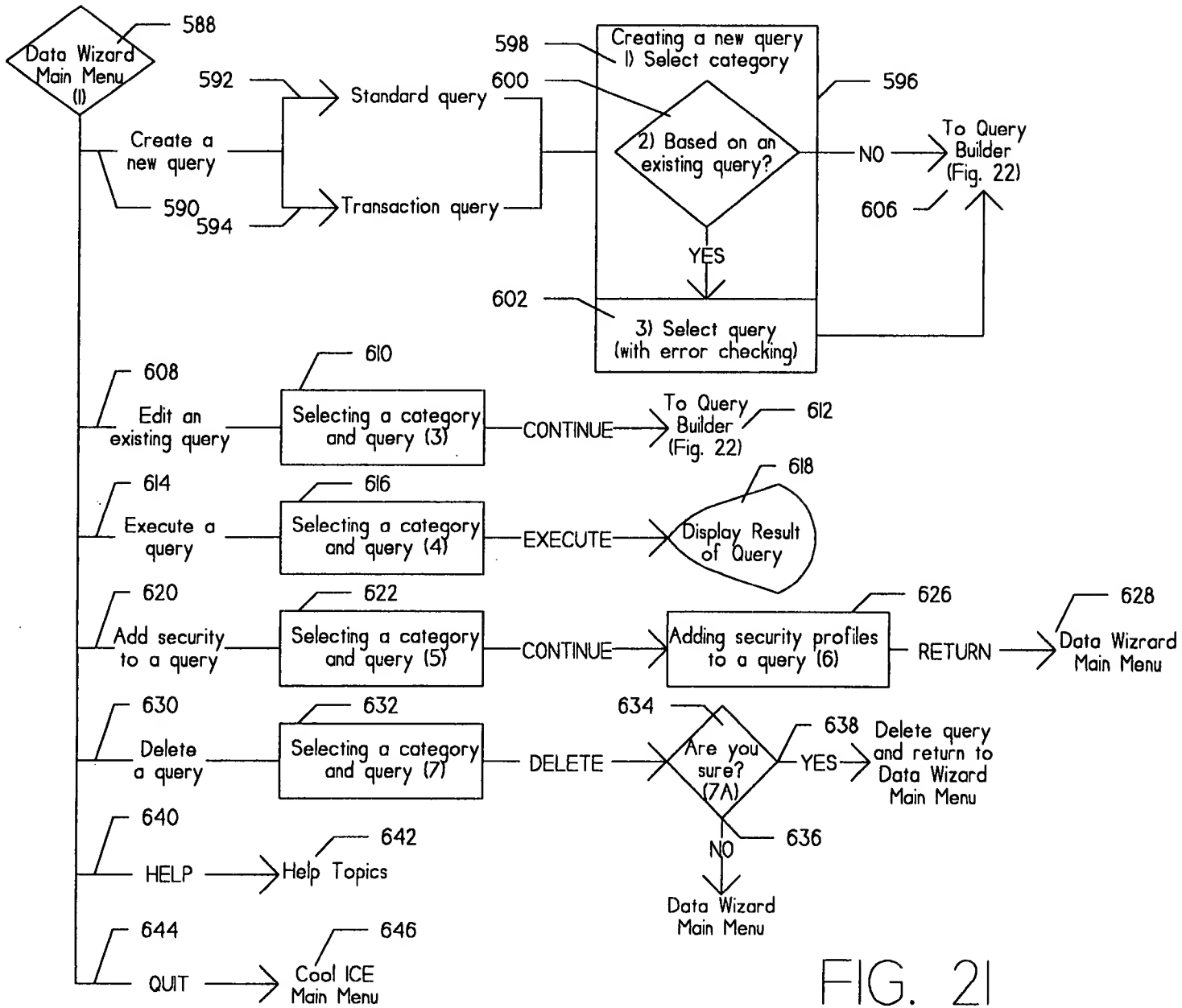
588
Data Wizard Main Menu (1)
592
Standard query
Create a new query
590
594
Transaction query
598
Creating a new query 1) Select category
600
2) Based on an existing query?
596
NO
To Query Builder (Fig. 22)
606
YES
602
3) Select query (with error checking)
608
Edit an existing query
610
Selecting a category and query (3)
CONTINUE
To Query Builder (Fig. 22)
612
614
Execute a query
616
Selecting a category and query (4)
EXECUTE
618
Display Result of Query
620
Add security to a query
622
Selecting a category and query (5)
CONTINUE
626
Adding security profiles to a query (6)
RETURN
628
Data Wizard Main Menu
630
Delete a query
632
Selecting a category and query (7)
DELETE
634
Are you sure? (7A)
638
YES
Delete query and return to Data Wizard Main Menu
636
NO
Data Wizard Main Menu
640
HELP
642
Help Topics
644
QUIT
646
Cool ICE Main Menu

FIG. 21

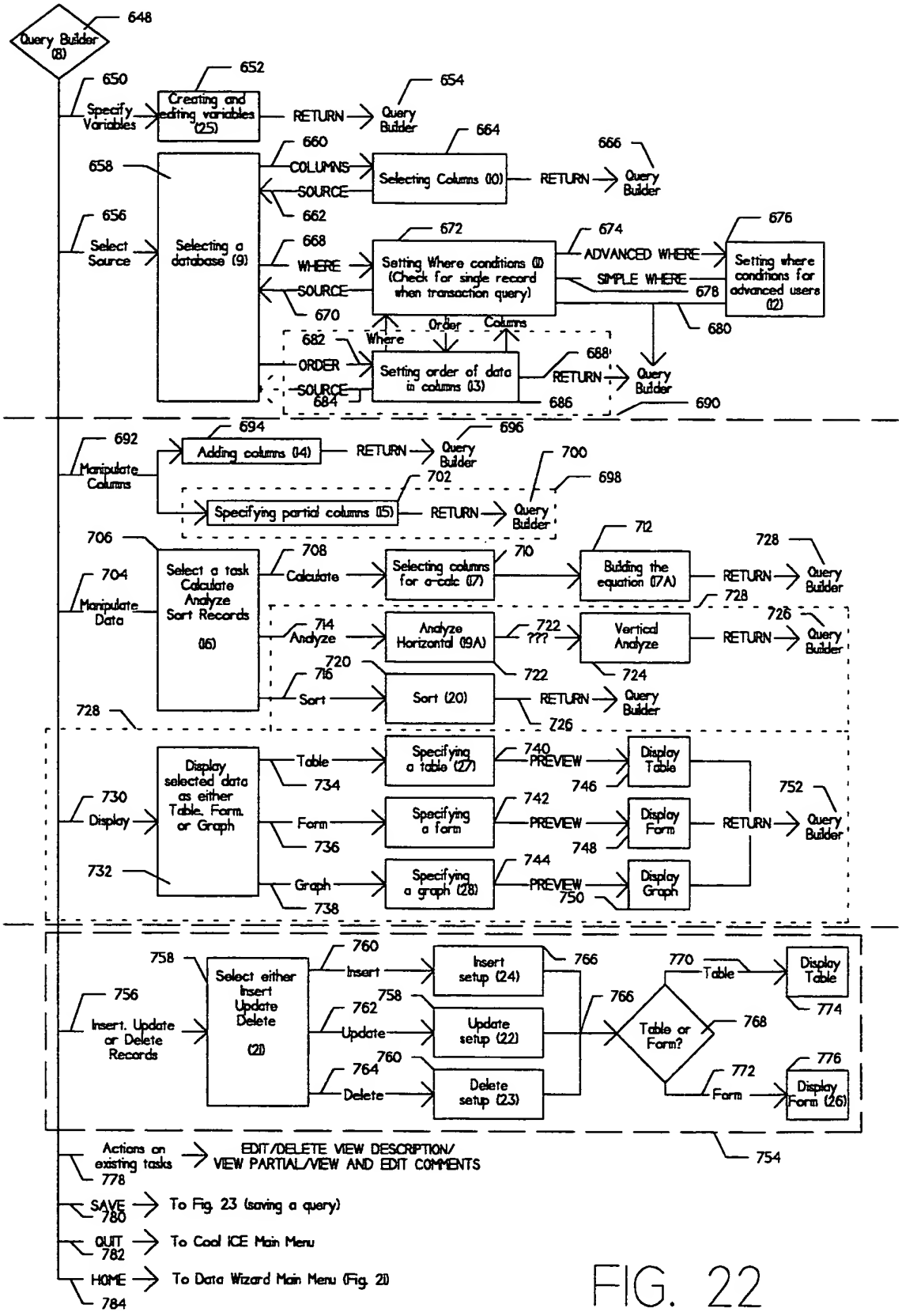
Query Builder (8)
648
Specify Variables
650
Creating and editing variables (25)
652
RETURN
Query Builder
654
Select Source
656
Selecting a database (9)
658
COLUMNS
660
SOURCE
662
Selecting Columns (10)
664
RETURN
Query Builder
666
WHERE
668
SOURCE
670
Setting Where conditions (11) (Check for single record when transaction query)
672
ADVANCED WHERE
674
SIMPLE WHERE
678
Setting where conditions for advanced users (12)
676
680
Where
Order
Columns
ORDER
682
SOURCE
684
Setting order of data in columns (13)
RETURN
688
Query Builder
686
690
Manipulate Columns
692
Adding columns (14)
694
RETURN
Query Builder
696
Specifying partial columns (15)
698
RETURN
Query Builder
700
702
Manipulate Data
704
Select a task Calculate Analyze Sort Records (16)
706
Calculate
708
Selecting columns for a-calc (17)
710
Building the equation (17A)
712
RETURN
Query Builder
728
Analyze
714
Analyze Horizontal (19A)
722
???
Vertical Analyze
724
RETURN
Query Builder
726
Sort
716
Sort (20)
720
RETURN
Query Builder
726
Display
730
Display selected data as either Table, Form, or Graph
732
Table
734
Specifying a table (27)
740
PREVIEW
Display Table
746
Form
736
Specifying a form
742
PREVIEW
Display Form
748
RETURN
Query Builder
752
Graph
738
Specifying a graph (28)
744
PREVIEW
Display Graph
750
Insert, Update or Delete Records
756
Select either Insert Update Delete (21)
758
Insert
760
Insert setup (24)
766
Update
762
Update setup (22)
758
Delete
764
Delete setup (23)
760
Table or Form?
770
Table
Display Table
774
768
Form
772
Display Form (26)
776
Actions on existing tasks
778
EDIT/DELETE VIEW DESCRIPTION/ VIEW PARTIAL/VIEW AND EDIT COMMENTS
754
SAVE
780
To Fig. 23 (saving a query)
QUIT
782
To Cool ICE Main Menu
HOME
784
To Data Wizard Main Menu (Fig. 21)

FIG. 22

PATENT SEARCH

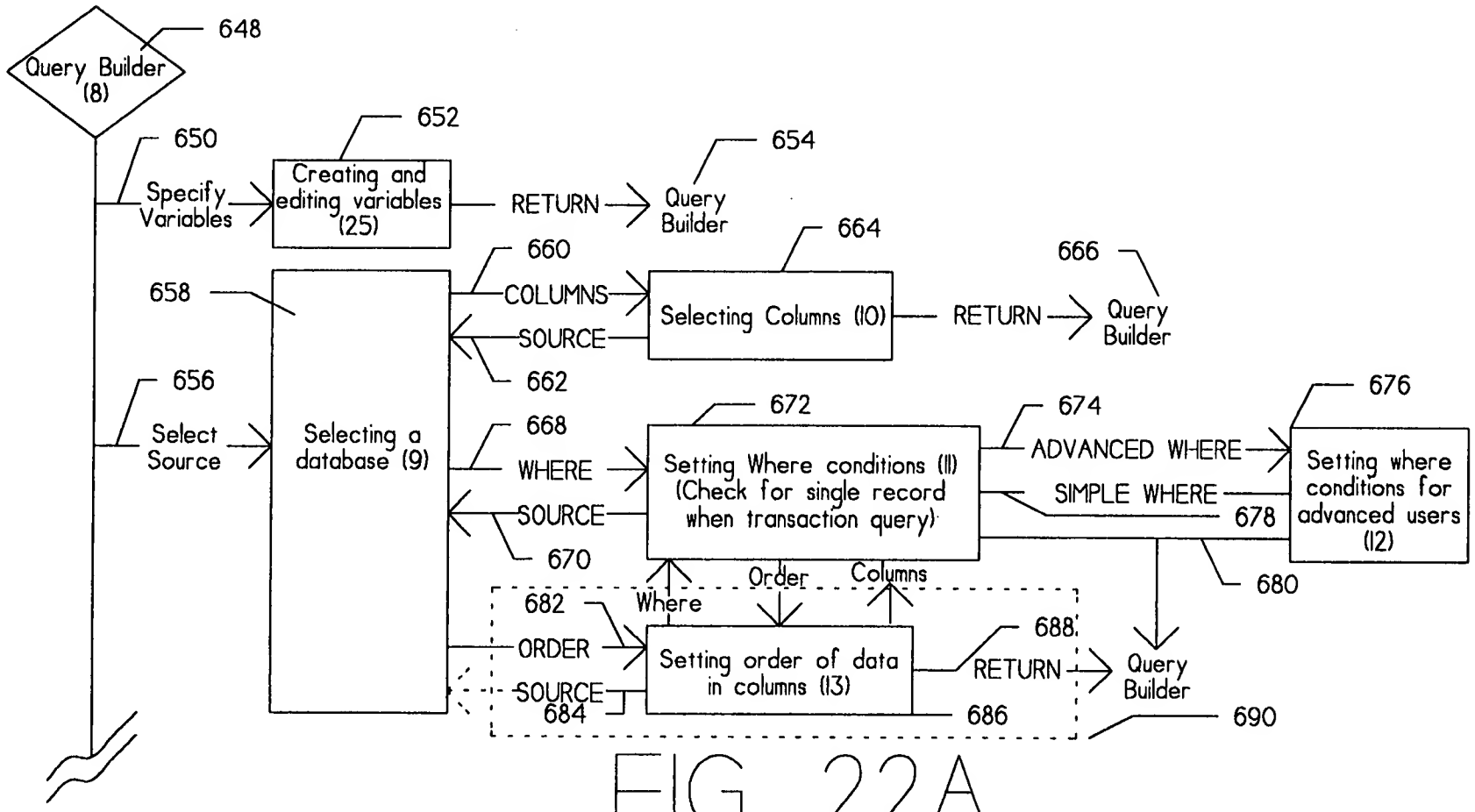

FIG. 22A

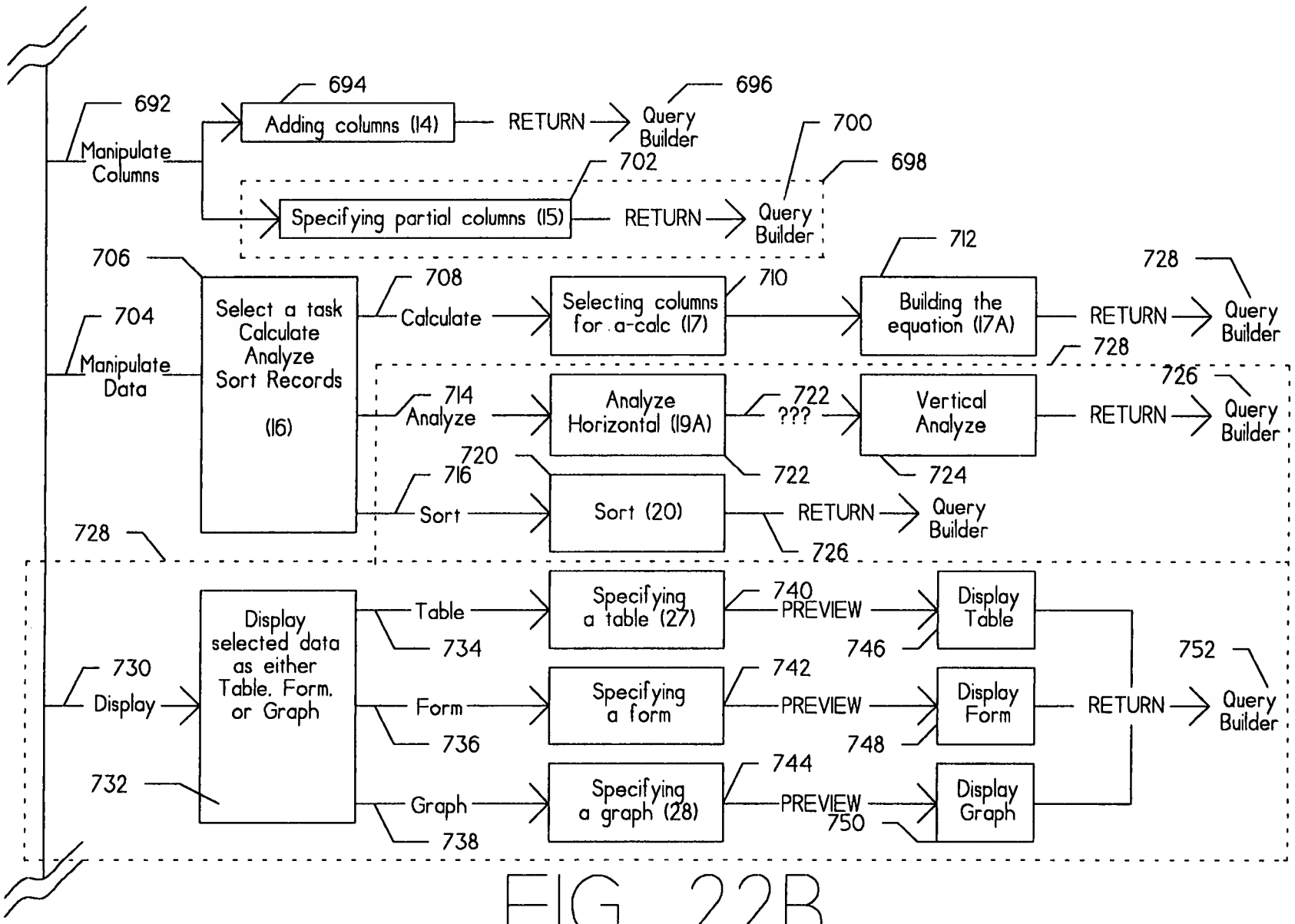
692
Manipulate Columns
694
Adding columns (14)
RETURN
696
Query Builder
700
702
Specifying partial columns (15)
RETURN
Query Builder
698
706
Select a task
Calculate
Analyze
Sort Records
(16)
704
Manipulate Data
708
Calculate
Selecting columns for a-calc (17)
710
712
Building the equation (17A)
RETURN
728
Query Builder
728
714
Analyze
Analyze Horizontal (19A)
722
???
Vertical Analyze
RETURN
726
Query Builder
720
716
Sort
Sort (20)
722
724
RETURN
Query Builder
726
728
730
Display
Display selected data as either Table, Form, or Graph
732
Table
734
Specifying a table (27)
740
PREVIEW
Display Table
746
Form
736
Specifying a form
742
PREVIEW
Display Form
748
RETURN
752
Query Builder
Graph
738
Specifying a graph (28)
744
PREVIEW
750
Display Graph

FIG. 22B

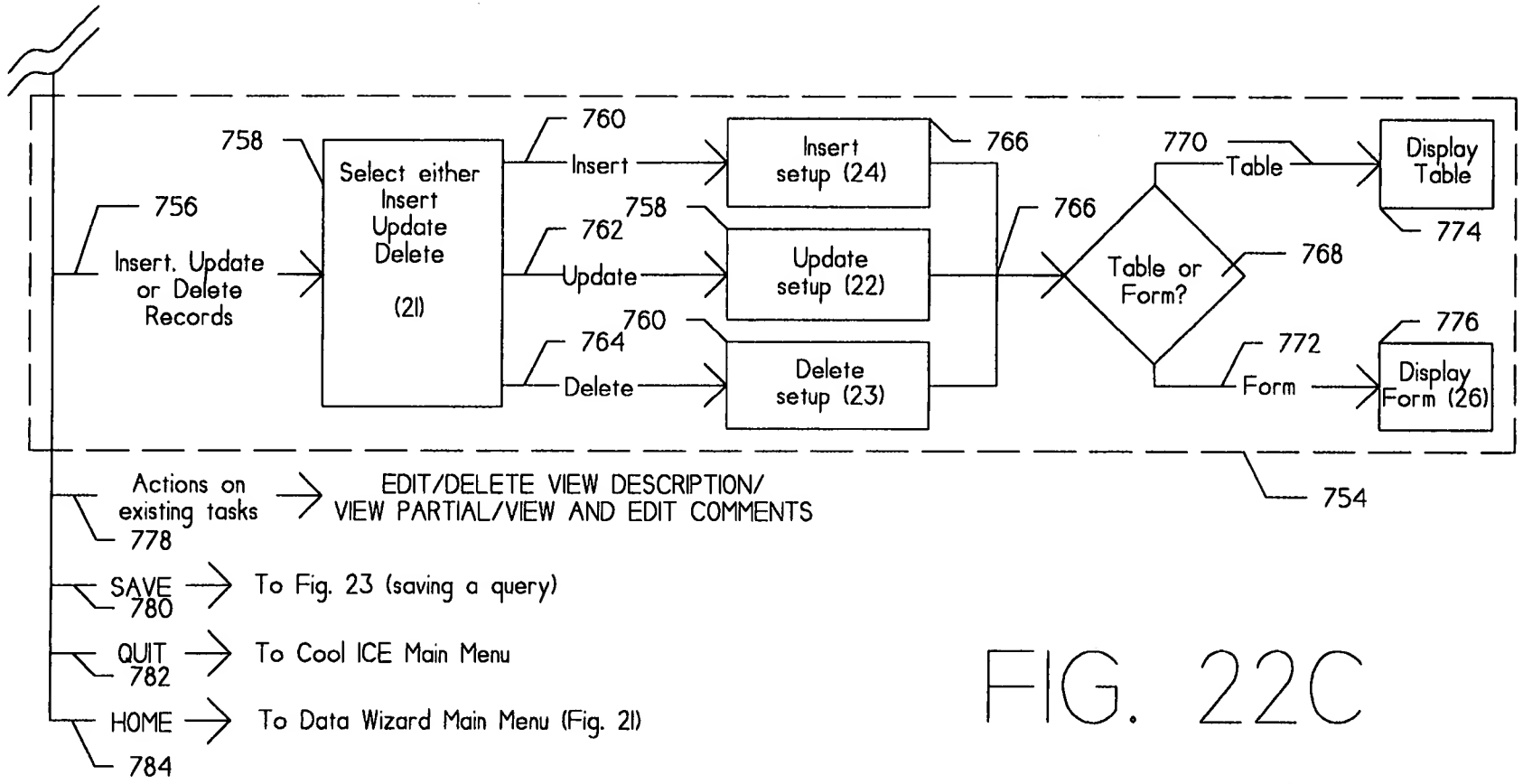
758
Select either Insert Update Delete (21)
760
Insert
762
Update
764
Delete
Insert setup (24)
Update setup (22)
Delete setup (23)
766
766
Table or Form?
770
Table
Display Table
774
768
772
Form
776
Display Form (26)
754
756
Insert, Update or Delete Records
Actions on existing tasks
778
EDIT/DELETE VIEW DESCRIPTION/ VIEW PARTIAL/VIEW AND EDIT COMMENTS
SAVE
780
To Fig. 23 (saving a query)
QUIT
782
To Cool ICE Main Menu
HOME
784
To Data Wizard Main Menu (Fig. 21)

FIG. 22C

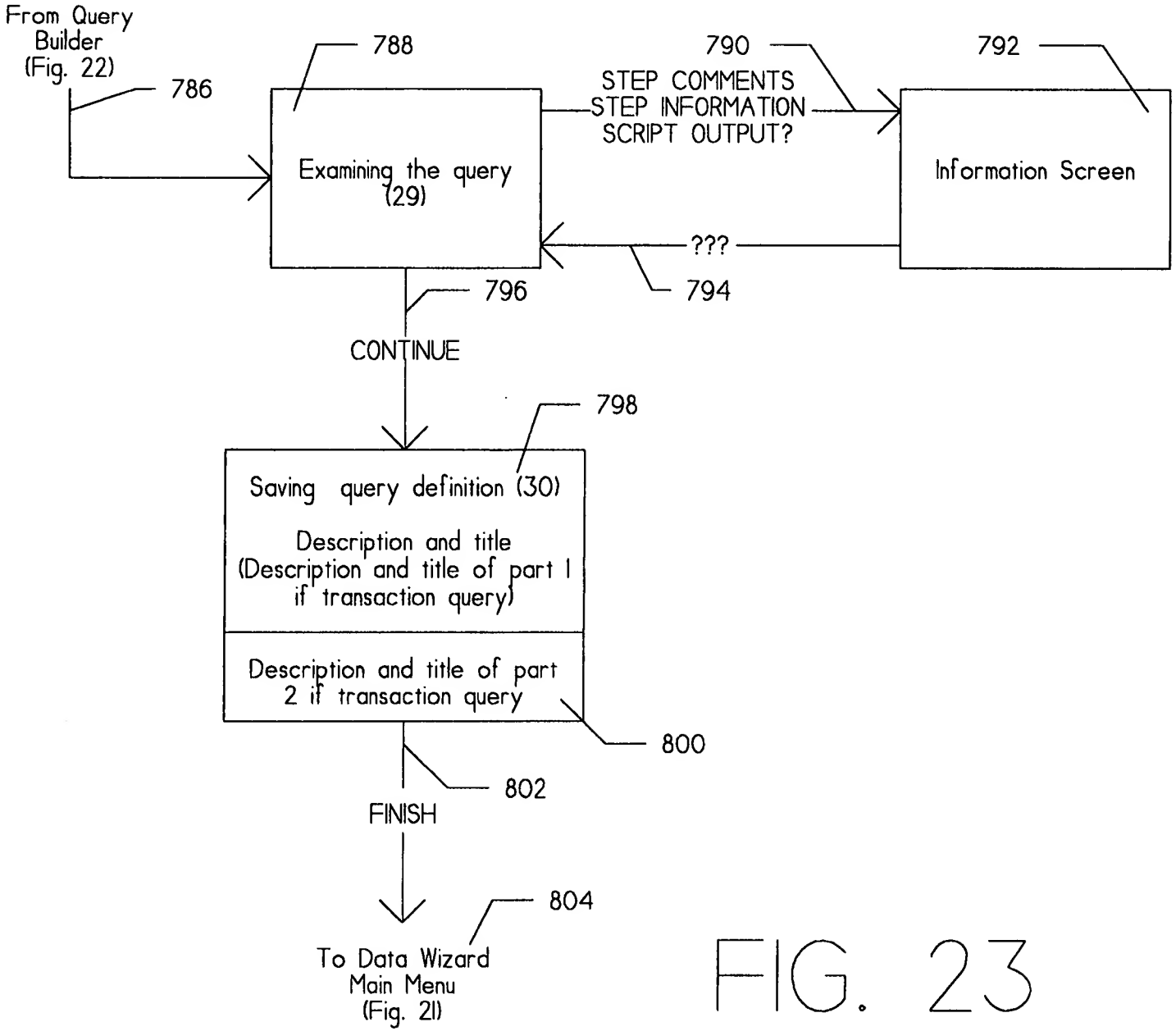
From Query Builder (Fig. 22)
786
788
Examining the query (29)
790
STEP COMMENTS
STEP INFORMATION
SCRIPT OUTPUT?
792
Information Screen
???
794
796
CONTINUE
798
Saving query definition (30)
Description and title (Description and title of part 1 if transaction query)
Description and title of part 2 if transaction query
800
802
FINISH
804
To Data Wizard Main Menu (Fig. 21)

FIG. 23

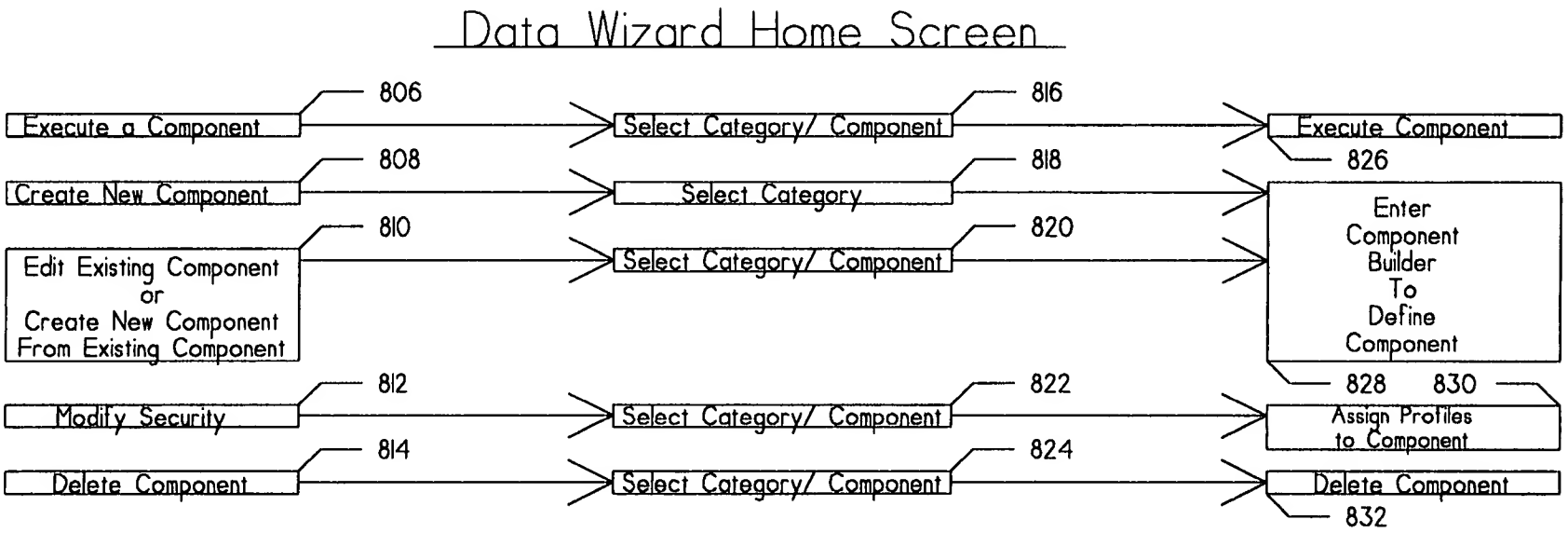
Data Wizard Home Screen
Execute a Component
806
Create New Component
808
Edit Existing Component
or
Create New Component
From Existing Component
810
Modify Security
812
Delete Component
814
Select Category/ Component
816
Select Category
818
Select Category/ Component
820
Select Category/ Component
822
Select Category/ Component
824
Execute Component
826
Enter
Component
Builder
To
Define
Component
828
830
Assign Profiles
to Component
Delete Component
832

FIG. 24

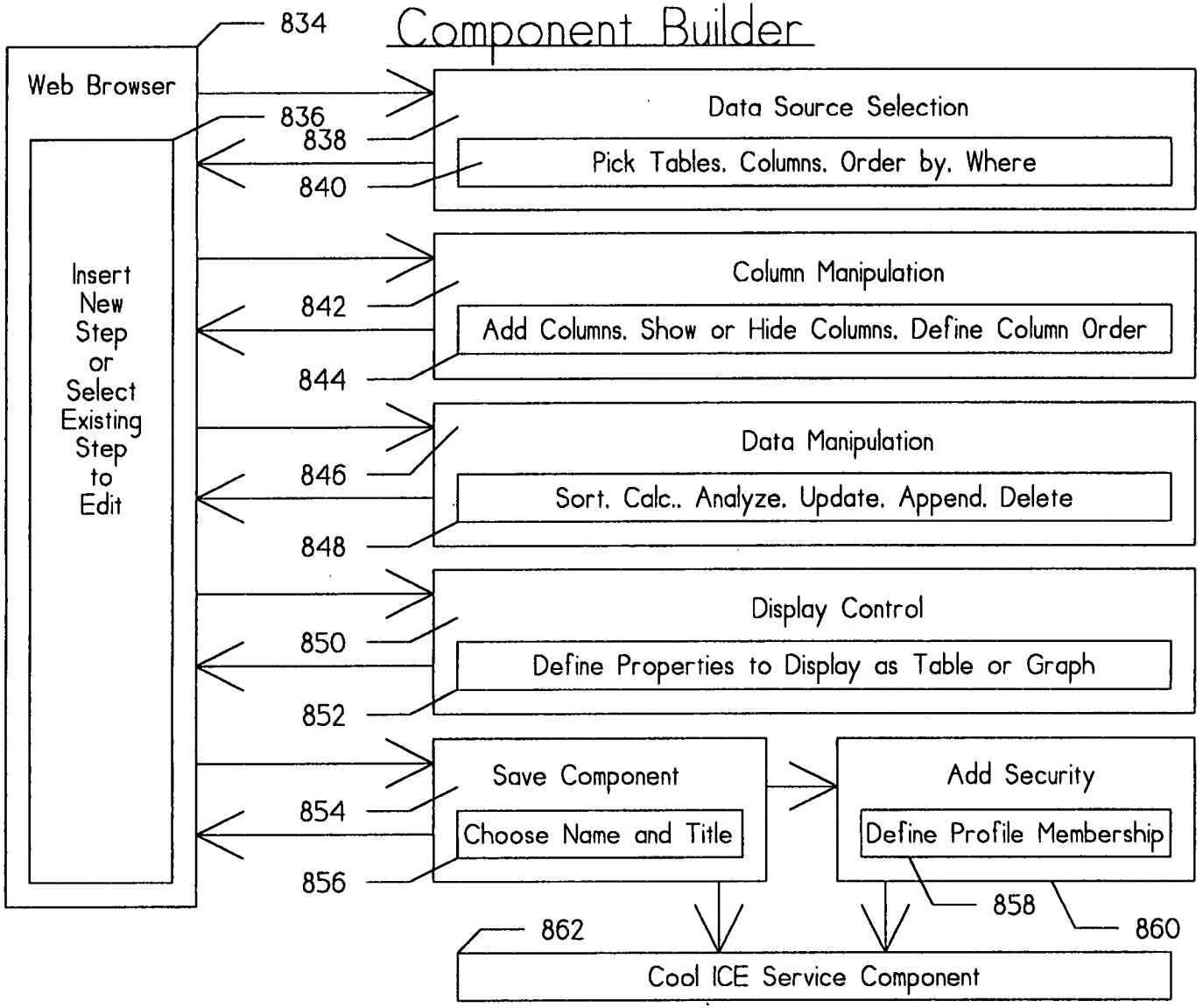
Component Builder
834
Web Browser
836
838
840
Insert New Step or Select Existing Step to Edit
Data Source Selection
Pick Tables. Columns. Order by. Where
842
844
Column Manipulation
Add Columns. Show or Hide Columns. Define Column Order
846
848
Data Manipulation
Sort. Calc.. Analyze. Update. Append. Delete
850
852
Display Control
Define Properties to Display as Table or Graph
854
856
Save Component
Choose Name and Title
Add Security
Define Profile Membership
858
860
862
Cool ICE Service Component

FIG. 25

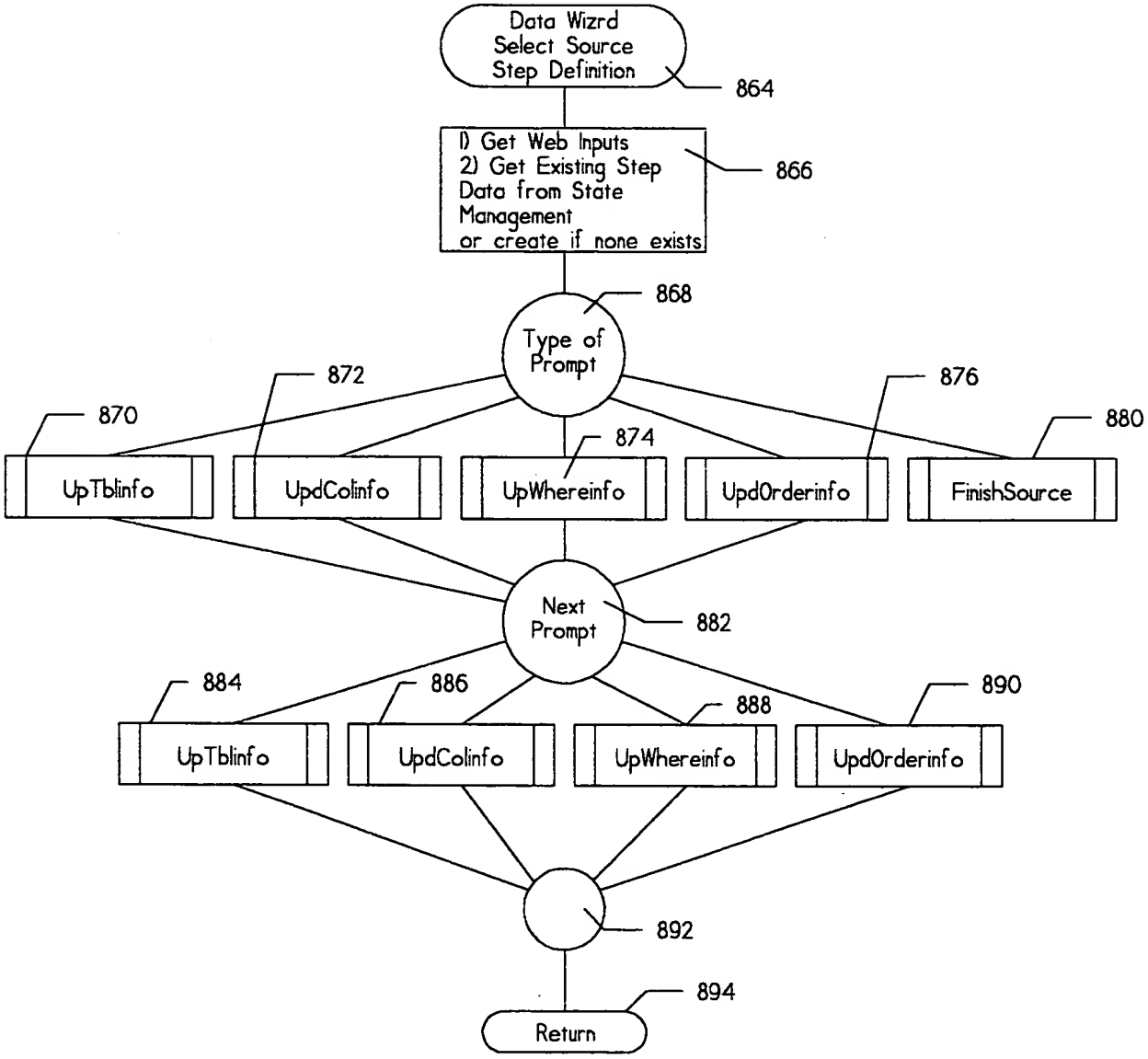
Data Wizrd
Select Source
Step Definition
864
1) Get Web Inputs
2) Get Existing Step
Data from State
Management
or create if none exists
866
868
Type of
Prompt
870
872
874
876
880
UpTblinfo
UpdColinfo
UpWhereinfo
UpdOrderinfo
FinishSource
Next
Prompt
882
884
886
888
890
UpTblinfo
UpdColinfo
UpWhereinfo
UpdOrderinfo
892
894
Return

FIG. 26

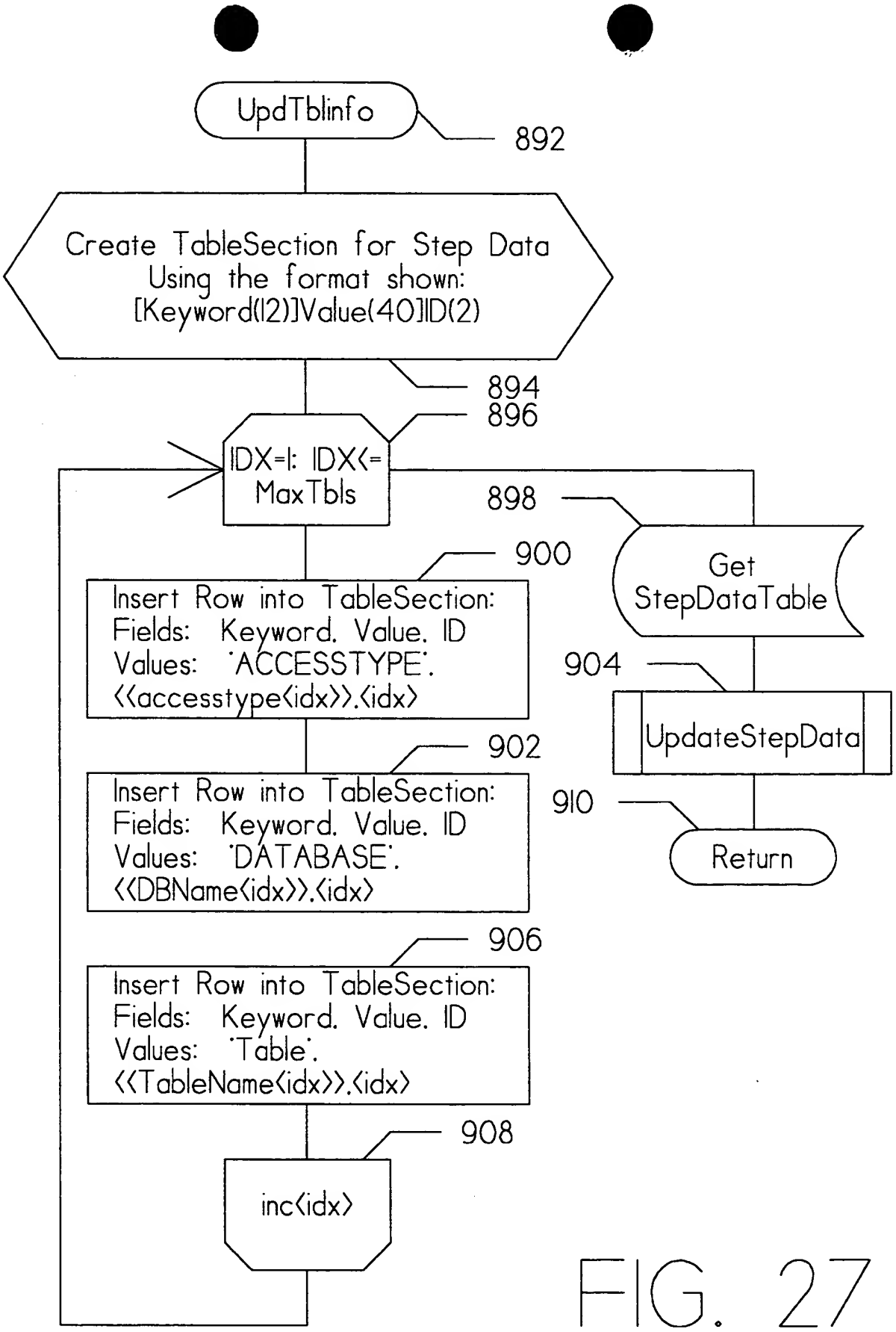
UpdTblinfo
892
Create TableSection for Step Data
Using the format shown:
[Keyword(12)]Value(40]ID(2)
894
896
IDX=1: IDX<=
MaxTbls
898
Get
StepDataTable
900
Insert Row into TableSection:
Fields: Keyword. Value. ID
Values: 'ACCESSTYPE'.
<<accesstype<idx>>.<idx>
904
UpdateStepData
902
Insert Row into TableSection:
Fields: Keyword. Value. ID
Values: 'DATABASE'.
<<DBName<idx>>.<idx>
910
Return
906
Insert Row into TableSection:
Fields: Keyword. Value. ID
Values: 'Table'.
<<TableName<idx>>.<idx>
908
inc<idx>

FIG. 27

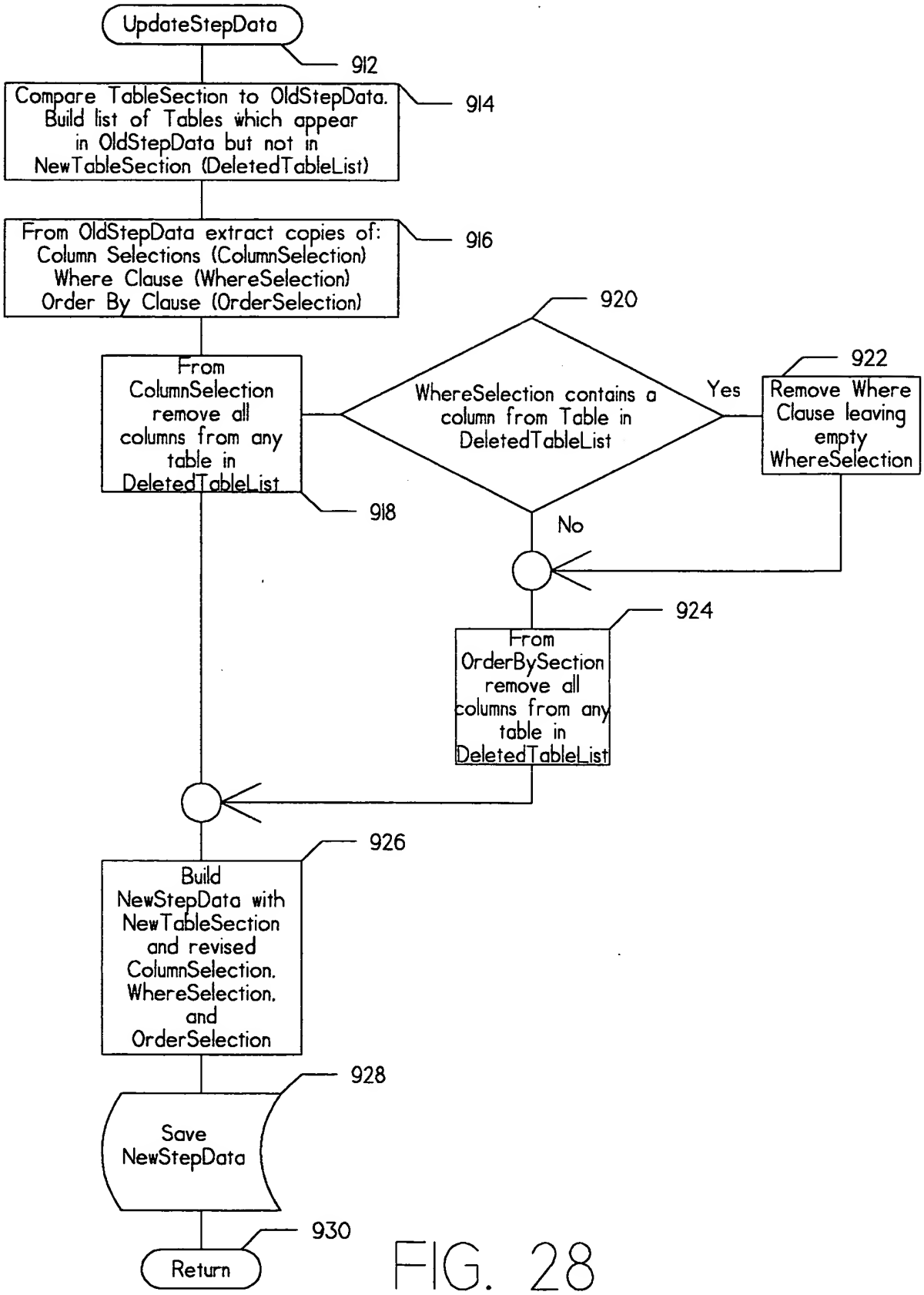
UpdateStepData
912
Compare TableSection to OldStepData. Build list of Tables which appear in OldStepData but not in NewTableSection (DeletedTableList)
914
From OldStepData extract copies of: Column Selections (ColumnSelection) Where Clause (WhereSelection) Order By Clause (OrderSelection)
916
920
From ColumnSelection remove all columns from any table in DeletedTableList
WhereSelection contains a column from Table in DeletedTableList
Yes
922
Remove Where Clause leaving empty WhereSelection
918
No
924
From OrderBySection remove all columns from any table in DeletedTableList
926
Build NewStepData with NewTableSection and revised ColumnSelection. WhereSelection. and OrderSelection
928
Save NewStepData
930
Return

FIG. 28

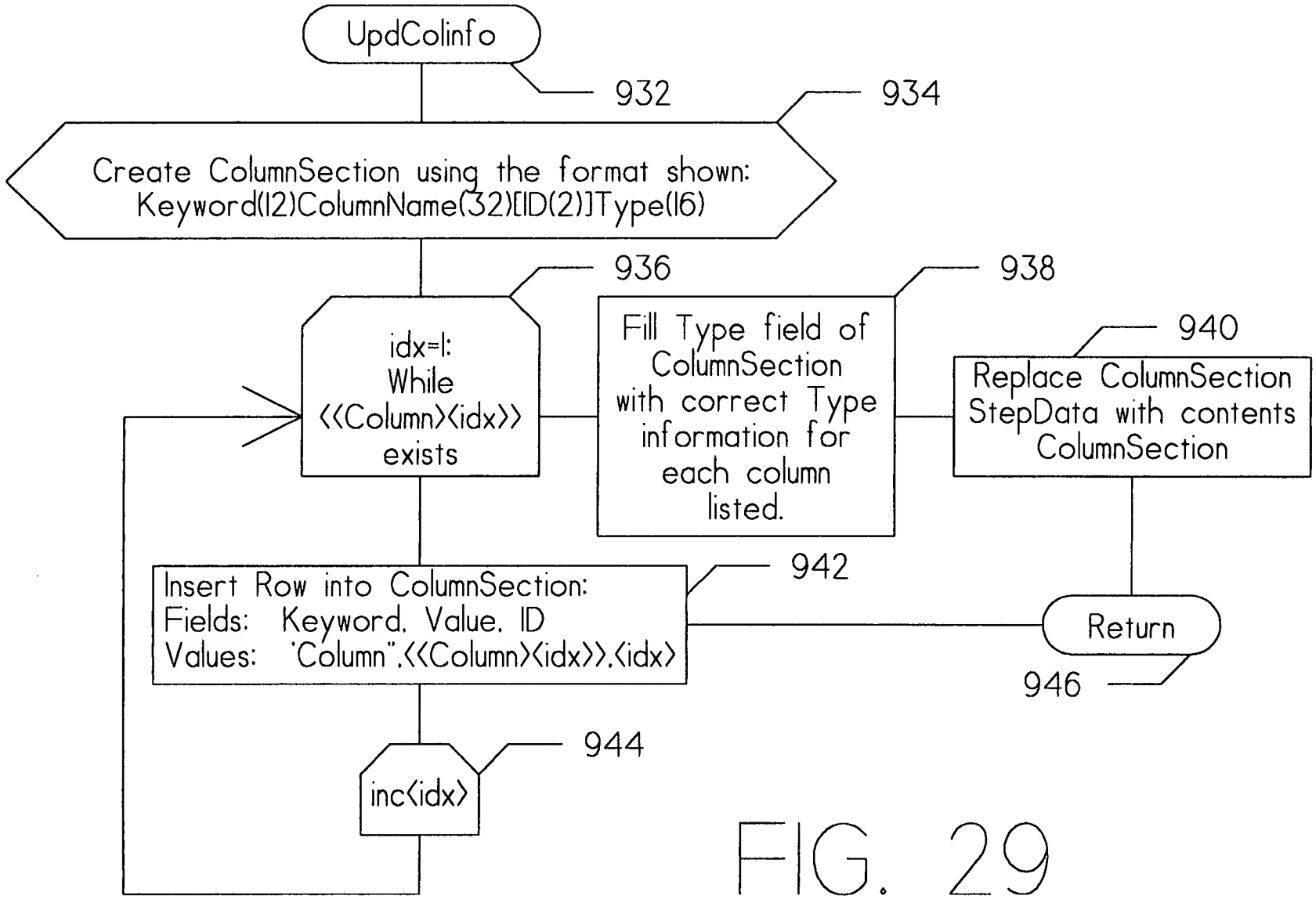
UpdColinfo
932
934
Create ColumnSection using the format shown:
Keyword(12)ColumnName(32)[ID(2)]Type(16)
936
938
940
idx=1:
While
<<Column><idx>>
exists
Fill Type field of
ColumnSection
with correct Type
information for
each column
listed.
Replace ColumnSection
StepData with contents
ColumnSection
942
Insert Row into ColumnSection:
Fields: Keyword, Value, ID
Values: "Column",<<Column><idx>>,<idx>
Return
946
944
inc<idx>

FIG. 29

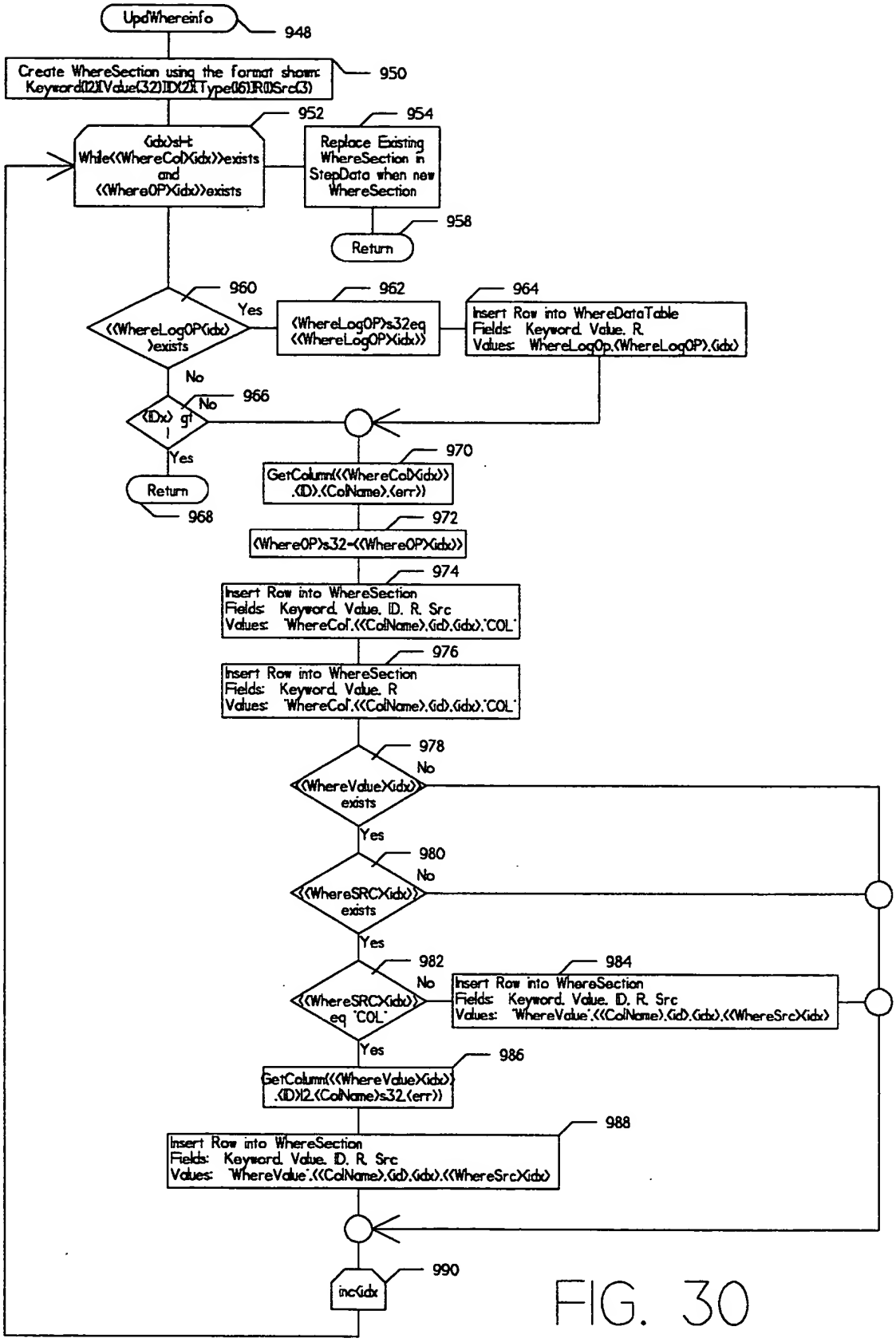
UpdWhereInfo
948
Create WhereSection using the format shown:
Keyword(12)Value(32)ID(2)Type(16)RID)Src(3)
950
952
(idx)=1
While(<WhereCol(idx)>exists
and
(<WhereOP(idx)>exists
954
Replace Existing
WhereSection in
StepData when new
WhereSection
958
Return
960
(<WhereLogOP(idx)
)exists
Yes
962
(WhereLogOP)s32eq
(<WhereLogOP(idx)>)
964
Insert Row into WhereDataTable
Fields: Keyword, Value, R
Values: WhereLogOp,(WhereLogOP),(idx)
No
(ID) gt
1
No
966
Yes
Return
968
970
GetColumn((<WhereCol(idx)>)
,(ID),(ColName),(err))
972
(WhereOP)s32=(<WhereOP(idx)>)
974
Insert Row into WhereSection
Fields: Keyword, Value, ID, R, Src
Values: 'WhereCol',(<ColName),(id),(idx),'COL'
976
Insert Row into WhereSection
Fields: Keyword, Value, R
Values: 'WhereCol',(<ColName),(id),(idx),'COL'
978
(<WhereValue(idx)>)
exists
No
Yes
980
(<WhereSRC(idx)>)
exists
No
Yes
982
(<WhereSRC(idx)>)
eq 'COL'
No
984
Insert Row into WhereSection
Fields: Keyword, Value, ID, R, Src
Values: 'WhereValue',(<ColName),(id),(idx),(<WhereSrc(idx)
Yes
986
GetColumn((<WhereValue(idx)>)
,(ID)12,(ColName)s32,(err))
988
Insert Row into WhereSection
Fields: Keyword, Value, ID, R, Src
Values: 'WhereValue',(<ColName),(id),(idx),(<WhereSrc(idx)
990
incidx

FIG. 30

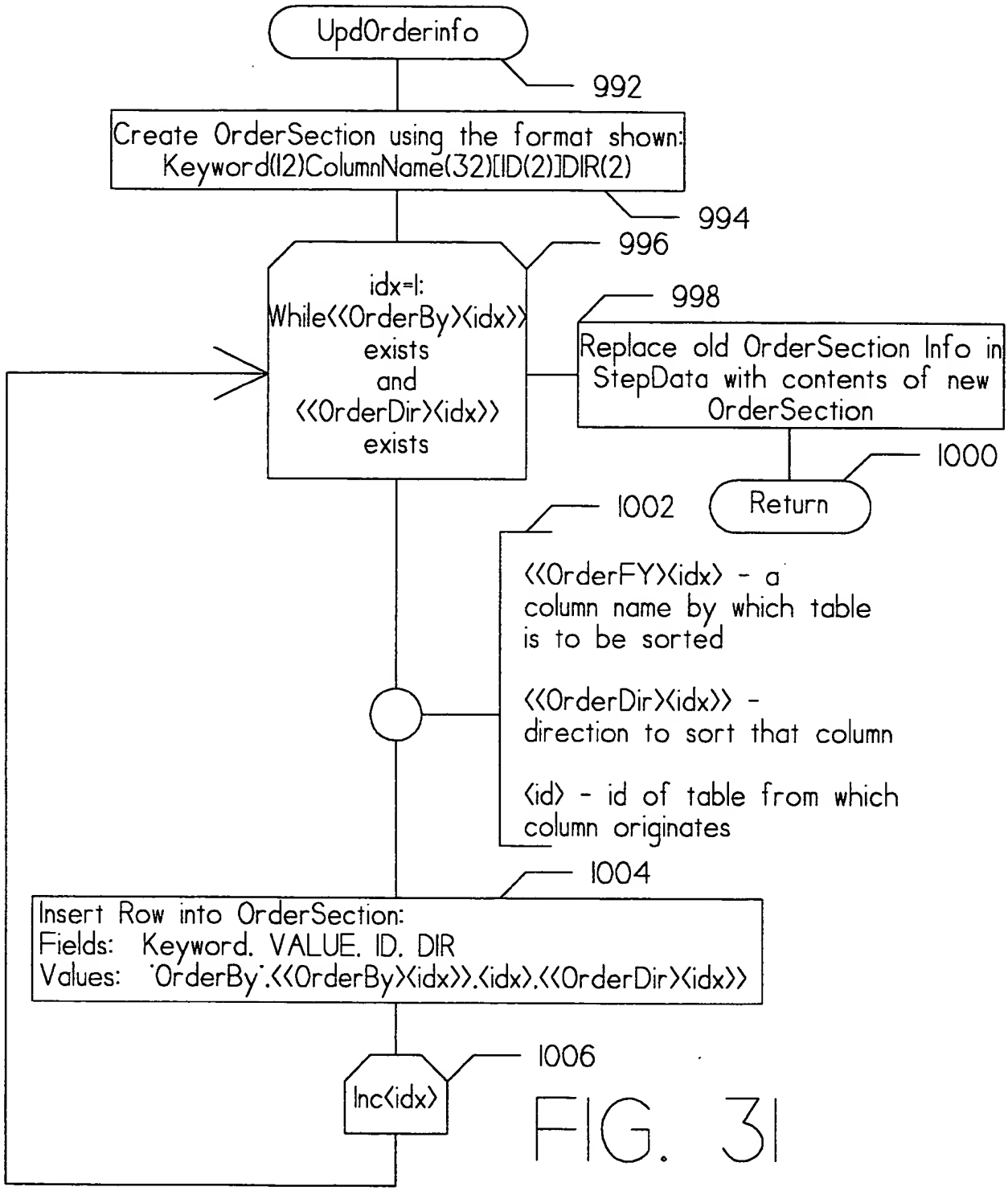
UpdOrderinfo
992
Create OrderSection using the format shown:
Keyword(12)ColumnName(32)[ID(2)]DIR(2)
994
996
idx=1:
While<<OrderBy>idx>>
exists
and
<<OrderDir>idx>>
exists
998
Replace old OrderSection Info in StepData with contents of new OrderSection
1000
Return
1002
<<OrderFY>idx> - a column name by which table is to be sorted
<<OrderDir>idx>> - direction to sort that column
<id> - id of table from which column originates
1004
Insert Row into OrderSection:
Fields: Keyword. VALUE. ID. DIR
Values: 'OrderBy'.<<OrderBy>idx>>.<idx>.<<OrderDir>idx>>
1006
Inc<idx>

FIG. 31

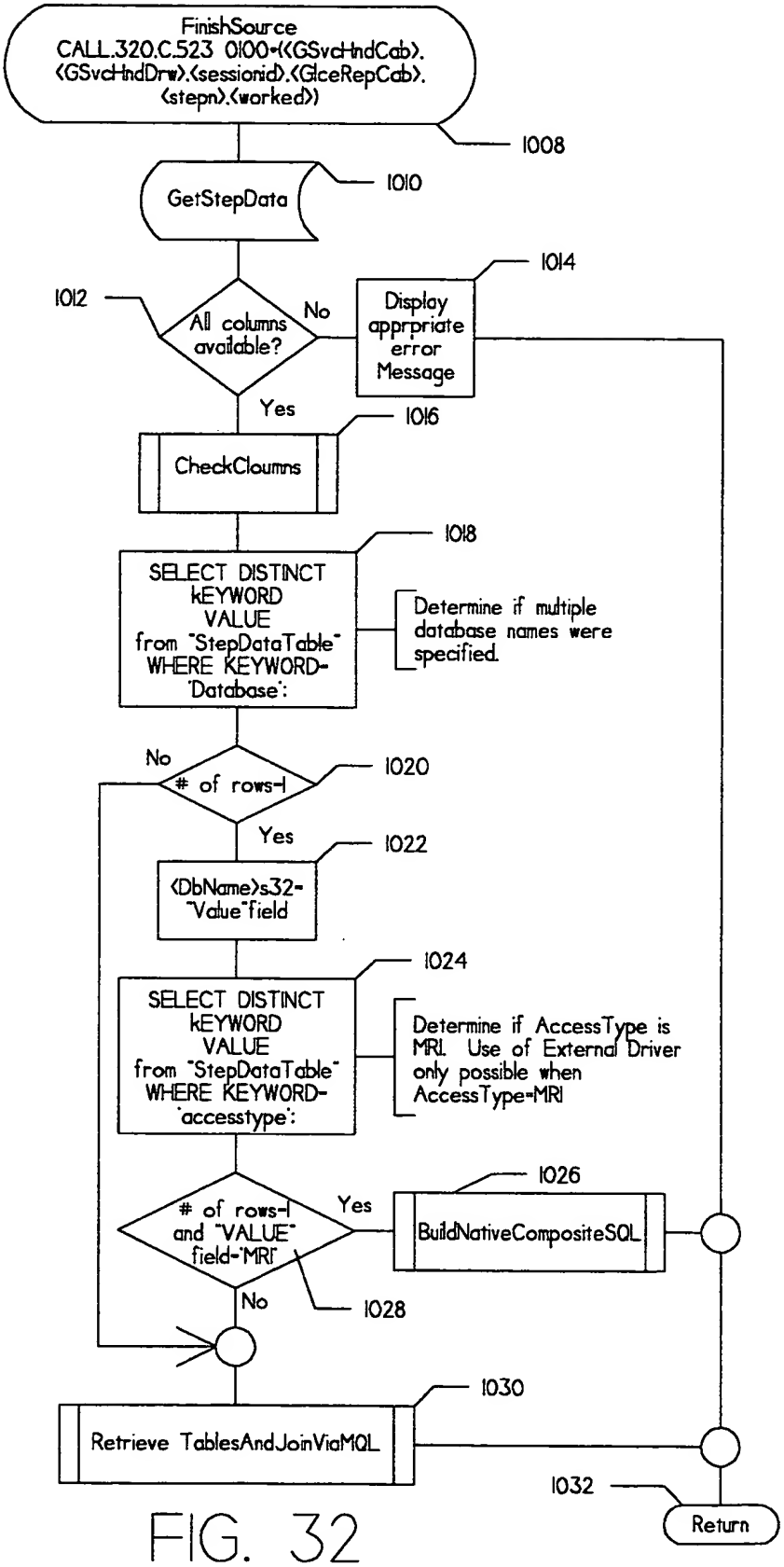
FinishSource
CALL.320.C.523 0100*(<GSvcHndCab>.
<GSvcHndDrw>.<sessionid>.<GlceRepCab>.
<stepn>.<worked>)
1008
GetStepData
1010
1012
All columns available?
No
1014
Display apprpriate error Message
Yes
1016
CheckCloumns
1018
SELECT DISTINCT kEYWORD VALUE from "StepDataTable" WHERE KEYWORD-'Database':
Determine if multiple database names were specified.
No
# of rows-1
1020
Yes
1022
<DbName>s32-"Value"field
1024
SELECT DISTINCT kEYWORD VALUE from "StepDataTable" WHERE KEYWORD-'accesstype':
Determine if AccessType is MRI. Use of External Driver only possible when AccessType-MRI
1026
# of rows-1 and "VALUE" field-'MRI'
Yes
BuildNativeCompositeSQL
No
1028
1030
Retrieve TablesAndJoinViaMQL
1032
Return

FIG. 32

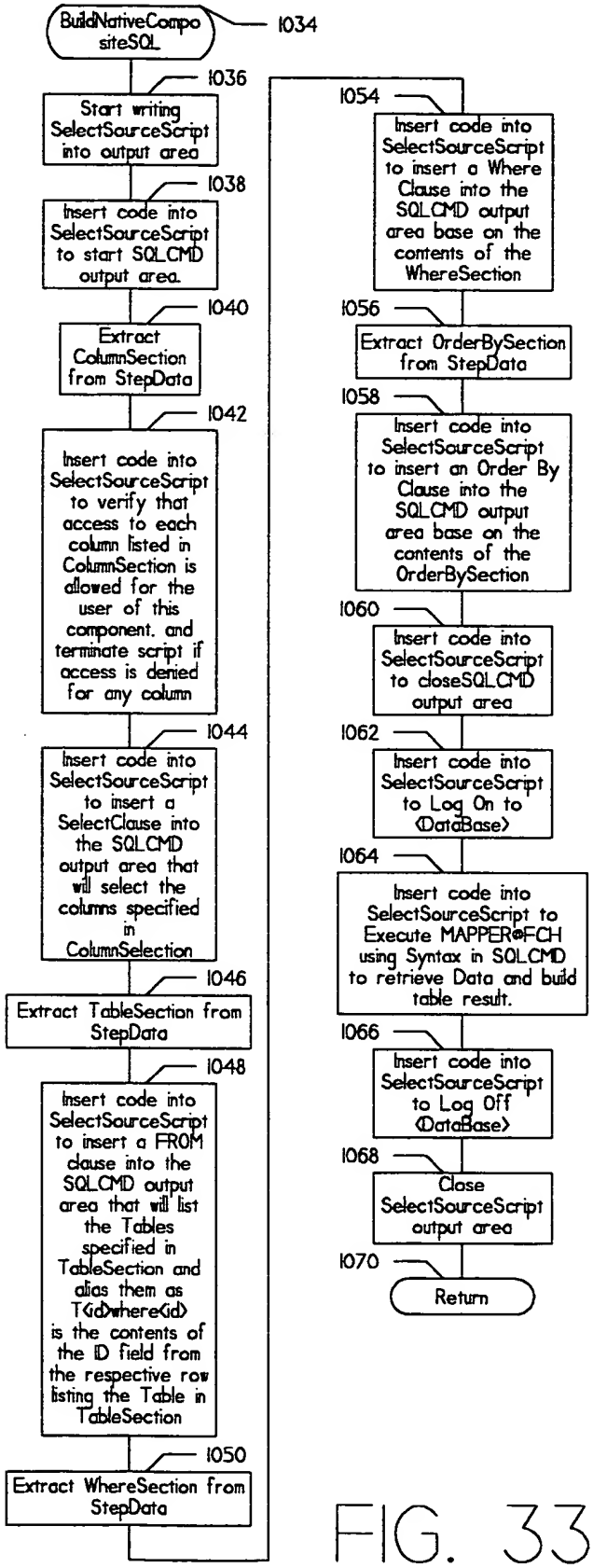
BuildNativeCompositeSQL
1034
1036
Start writing SelectSourceScript into output area
1038
Insert code into SelectSourceScript to start SQLCMD output area.
1040
Extract ColumnSection from StepData
1042
Insert code into SelectSourceScript to verify that access to each column listed in ColumnSection is allowed for the user of this component. and terminate script if access is denied for any column
1044
Insert code into SelectSourceScript to insert a SelectClause into the SQLCMD output area that will select the columns specified in ColumnSelection
1046
Extract TableSection from StepData
1048
Insert code into SelectSourceScript to insert a FROM clause into the SQLCMD output area that will list the Tables specified in TableSection and alias them as T<id>whereid> is the contents of the ID field from the respective row listing the Table in TableSection
1050
Extract WhereSection from StepData
1054
Insert code into SelectSourceScript to insert a Where Clause into the SQLCMD output area base on the contents of the WhereSection
1056
Extract OrderBySection from StepData
1058
Insert code into SelectSourceScript to insert an Order By Clause into the SQLCMD output area base on the contents of the OrderBySection
1060
Insert code into SelectSourceScript to closeSQLCMD output area
1062
Insert code into SelectSourceScript to Log On to <DataBase>
1064
Insert code into SelectSourceScript to Execute MAPPER@FCH using Syntax in SQLCMD to retrieve Data and build table result.
1066
Insert code into SelectSourceScript to Log Off <DataBase>
1068
Close SelectSourceScript output area
1070
Return

FIG. 33

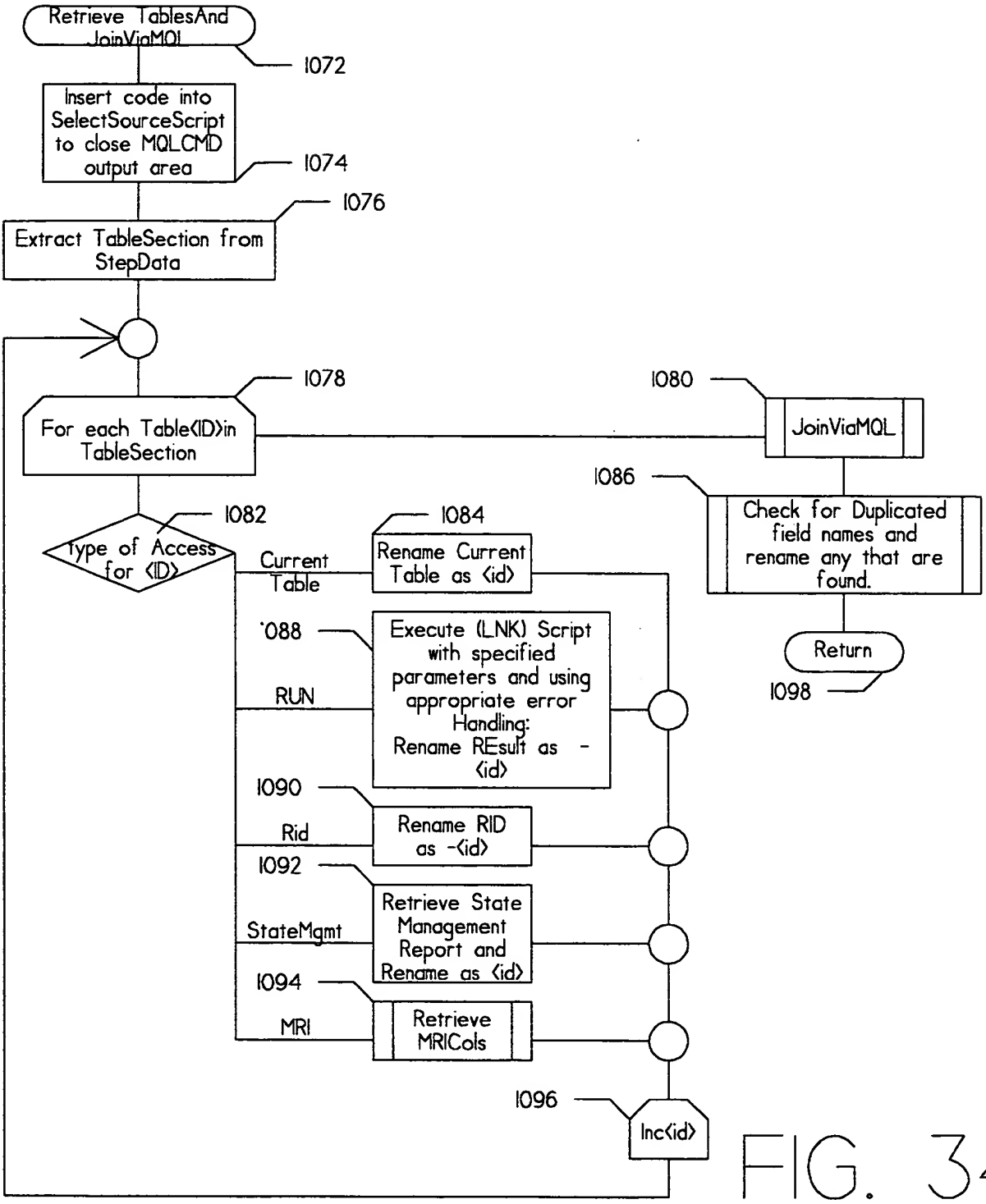
Retrieve TablesAnd JoinViaMQL
1072
Insert code into SelectSourceScript to close MQLCMD output area
1074
1076
Extract TableSection from StepData
1078
For each Table<ID>in TableSection
1080
JoinViaMQL
1086
Check for Duplicated field names and rename any that are found.
Return
1098
1082
Type of Access for <ID>
1084
Current Table
Rename Current Table as <id>
1088
RUN
Execute (LNK) Script with specified parameters and using appropriate error Handling: Rename REsult as - <id>
1090
Rid
Rename RID as -<id>
1092
StateMgmt
Retrieve State Management Report and Rename as <id>
1094
MRI
Retrieve MRICols
1096
Inc<id>

FIG. 34

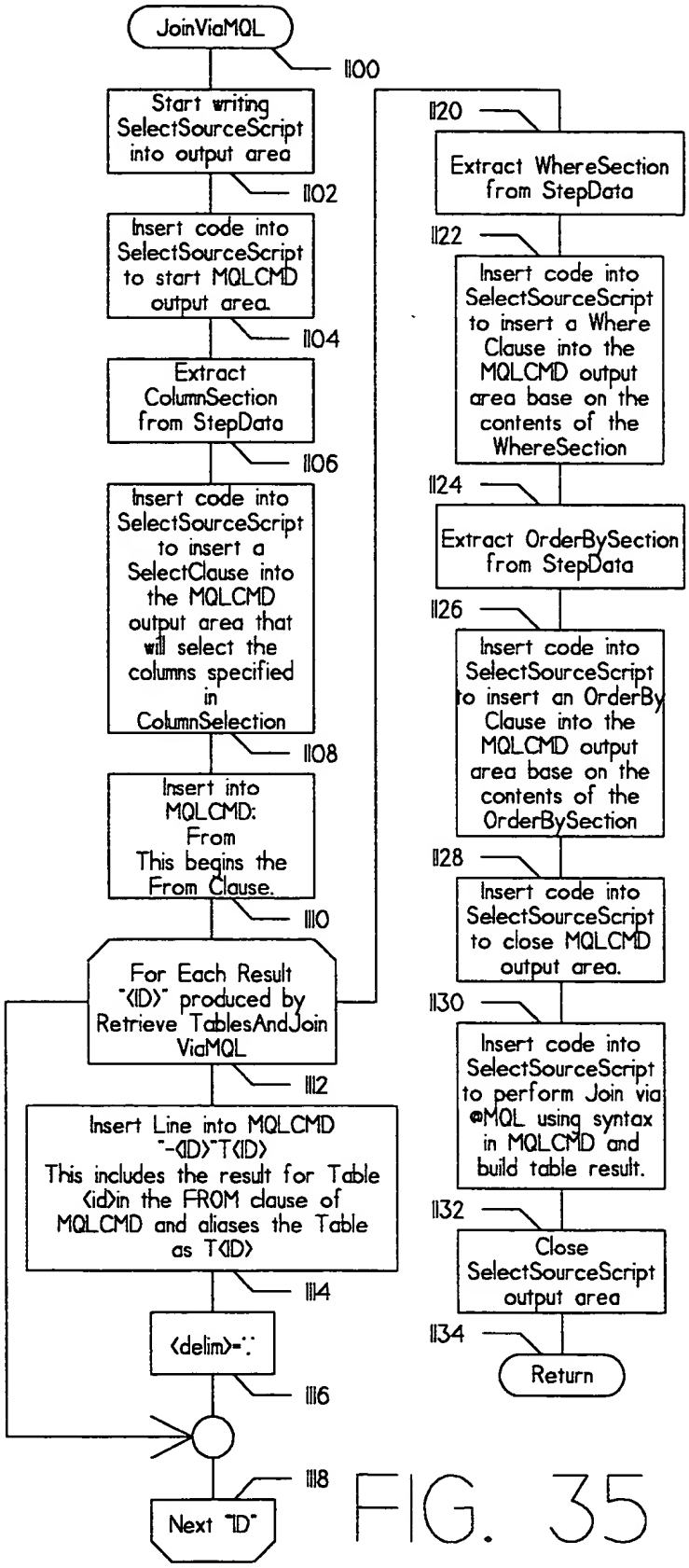
JoinViaMQL
1100
Start writing SelectSourceScript into output area
1102
Insert code into SelectSourceScript to start MQLCMD output area.
1104
Extract ColumnSection from StepData
1106
Insert code into SelectSourceScript to insert a SelectClause into the MQLCMD output area that will select the columns specified in ColumnSelection
1108
Insert into MQLCMD: From This begins the From Clause.
1110
For Each Result "<ID>" produced by Retrieve TablesAndJoin ViaMQL
1112
Insert Line into MQLCMD "-<ID>"T<ID> This includes the result for Table <id>in the FROM clause of MQLCMD and aliases the Table as T<ID>
1114
<delim>=":"
1116
Next "ID"
1118
1120
Extract WhereSection from StepData
1122
Insert code into SelectSourceScript to insert a Where Clause into the MQLCMD output area base on the contents of the WhereSection
1124
Extract OrderBySection from StepData
1126
Insert code into SelectSourceScript to insert an OrderBy Clause into the MQLCMD output area base on the contents of the OrderBySection
1128
Insert code into SelectSourceScript to close MQLCMD output area.
1130
Insert code into SelectSourceScript to perform Join via @MQL using syntax in MQLCMD and build table result.
1132
Close SelectSourceScript output area
1134
Return

FIG. 35